

Royal School of Mines.

PROF. SMYTH'S LECTURES ON MINING—No. XLIV.

[BY OUR SPECIAL REPORTER.]

We come now to another part of the fittings of the shaft—that of the means adopted for bringing the mineral from the bottom of the shaft up to daylight. In certain mines this operation is entirely unnecessary; in certain hilly countries, as parts of South Wales, even collieries are worked without any necessity for shafts, except, perhaps, here and there for purposes of ventilation, the minerals being brought out by adit levels. But it becomes more and more rare every year that mines can be worked by this method, and it is seen that in some cases it is far better to undergo the expense and difficulty of sinking shafts where there would otherwise be too great a distance of underground conveyance. In the great majority of mines at the present day it is absolutely necessary that there should be shafts, and to the shafts all the mineral must come, whether it be the profitable mineral, or attle, or water; and the traffic thus set up in the shafts becomes a matter of very high importance. Our course is too brief to allow us to go at any length into the consideration of the engines employed. It is very interesting historically to look back on the successive steps by which the steam-engine has been introduced into mines; and to see that before the time of Watt it was working in the mines, usually for the purpose of extracting the water, the water thus extracted being employed to raise the mineral. The wheel used was almost invariably of this character: constructed almost solely of wood, about a very strong wooden axis, generally made of a sound mass of oak; and then two sets of principal arms at right angles to each other, and embracing the main axle; add to these auxiliary arms, for the purpose of supporting the intermediate works, and you have the form of wheel largely used by Brindley, Smeaton, &c. The rim is from 10 to 12 in. wide, also of wood, having grooves cut in it for receiving the pieces of wood which form the boxes. Frequently there are two sets of boxes, inclined in the opposite direction, and according as the water is directed into one or the other set so will the wheel revolve in one or other direction. In such a wheel there is a large amount of material to be stopped and set in motion again at each reversal, and consequently a mechanical loss. Its convenience, however, speaks for it to a great extent, and it was universally employed for winding coals, even in the Newcastle district, up to within a half or three-quarters of a century ago, and it is also used in many mines now. The form more commonly employed now has the centre formed of a couple of bosses of cast-iron, which bear a number of sockets for receiving the arms which support the circumference. The arms are usually formed of light wood, but sometimes are entirely of iron. For the rough purposes of mines, and where they are generally intended to be repaired by the mine smith, it is best to have the wheels made of a solid cast-iron boss, wooden arms, and the circumference of cast-iron segments, cast with little flanges, or recesses, in which the buckets can be fixed. The buckets have not unfrequently been made of sheet-iron, but in the mines it is preferred to have them of wood, that they may be readily repaired when necessary. [Much information on the whole subject of these wheels will be found in the papers of Mr. Fairbairn.] Particular curves and forms have been proposed for the sheet-iron buckets, which shall have the most suitable capacity for water, and retain it till the bucket gets to the lowest point, and means have been adopted for allowing the air which is carried in by water to escape. Usually in the mining wheels there is no necessity for this latter arrangement, since there is commonly a little leakage in the buckets, which answers the purpose; or if not a few little holes may be put in. Large wheels, of the breadth of 14 to 15 feet, may be seen in the Devon Great Consols Mine. All these cast axles, valuable as they are, are subject to the inconvenience, and sometimes great risk, due to the brittleness of the material, and this is especially inconvenient when they have to be sent out to great distances, packed in various ways; it is, therefore, important that they should be replaced by wrought-iron. Great losses and delays may be caused also by the breaking of one of these axles; wrought-iron axles, however, are very expensive things, though this is the only reason the lecturer knew of why they should not be employed. The finest water-wheel we have in England, as regards its height, is the great wheel of the Laxey Mine, in the Isle of Man, which has a diameter of 70 ft.; the axle of this, narrow as it is (4 to 5 ft. in breadth), was tendered for by the cheapest firm for 500*l*. The size of wheel most generally employed is from 20 to 40 ft. diameter, the breadth of the wheel varying according to the breadth of the stream. If there is a considerable head of water it may be more convenient, and decidedly more economical, to break it into shorter lengths than to use it in one fall, for when you get wheels 50 to 60 ft. diameter they begin to be very expensive. Sheets of water falling from a considerable height are not likely to be very broad, and for mining purposes are suitable from about 2*½* to 5 ft. in breadth, 3 ft. being by far the most usual. When we pass from overshot to breast wheels a much larger volume of water can be obtained, even for high breast wheels: undershot wheels come into play rarely in mining affairs, and then they may require wheels of 12 to 18 ft. wide. Very long ago, before the end of the last century, it was proposed to employ a single instead of a double bucket wheel, and to keep the wheel continuously turning in one direction, and providing for the reversal of motion in the machinery by some simple arrangement of spur-wheels.

Another water machine should be noticed—the turbine: where a fall of 40, 50, or more feet of water occurs, instead of employing it on a water-wheel a turbine may be used. The turbine is known to every student of mechanical science as being a machine which in a very small space stores up a very great power: a machine going within a compass of 3 or 4 ft. is capable of doing a great amount of work both for winding and for dressing apparatus. Formerly it was thought that overshot water-wheels were the best kind of water machine, giving in their best form 7*½* to 80 per cent. of useful work; of late years some turbines are stated to give as good a proportion as the best water-wheels.

Taking a whole series of mines, you find the drawing the mineral to the surface by manual labour is a matter of very serious expenditure, especially in two or three phases of mining. Underground in metalliferous mines it is far more frequent than it ought to be to see a number of windlasses in a row, just as you may see in the bell-pit working for iron ore. As soon as you see such a sight you may make up your mind there is something wrong, either the directors are hard up for money, and are pressing the agents to raise the ore which lies below, or there is some mismanagement on the part of the agents, not to wait till they are through another level, and to work the ore above them. In some countries, especially in the South of Europe, little is thought of employing one-third of the men engaged in the mine on windlass-work. There may be special reasons for this in some cases, but as a general rule they should be replaced to a great extent. The system of hauling up the weight simply by the hand, like the hauling up of weights out of the hold of a ship, is almost unknown. The carrying of the material on the shoulders of men has been already referred to. The manner in which the weight is laid hold of by the machine employed is very different in different cases; perhaps the most common method amongst us is the single link iron chain, the chain weighing about 9 lbs. per fathom, up to 14 or 15 lbs. The use of this single link chain is combined with a good deal of risk to human life, as well as to the destruction of apparatus, still it is very largely used, partly on account of its packing into small compass. But where you purchase a chain ready made, and know nothing of the working of it, you cannot tell how much attention has been paid to the closing of the links, nor how far fracture is likely to take place. The risk is such a recognised fact that in the late Acts of Parliament it has been enacted that men are not to be raised or lowered by these single link chains. In the central districts for a long time past stiff or stump chains, made up of three or four links, with a strong piece of wood put through the links, and kept in place by two or three nails, have been used, such chains coiling on themselves without twisting or turning in the shaft. In these districts, where the

habit of slow winding of great weights is in vogue, the chains will weigh from 10 or 12 to 28 or 30 lbs. per yard. A few years ago hempen ropes were very largely used in this country; for a time nothing else was employed, though the lecturer believed that the fibres of different plants were included under the general name hemp. Hemp is, comparatively speaking, a very expensive material, and requires to be employed with great economy and care, and to be looked carefully over at the time of purchasing, to see that it is of good quality, and that it has not been used in rope before. The ropes are usually of three strands, and generally tarred, in order that they may stand the alternations of wet and dry better. For very heavy work very large and expensive ropes have to be used. Before 1830 it had been proposed to use flat ropes, three or four of the ordinary round ropes placed side by side and sewed together, and among the advantages of such ropes may be noticed the steadiness with which they pass down the shaft, and their coiling themselves on a narrow drum; but the wear and tear is very great, and this item of expense very large. The lecturer had known one or two cases where the expense of the ropes had been the principal cause for the abandonment of a mine. In Mexico the Mexican aloe is employed for rope making, and a great deal is imported into Belgium and France for the same purpose: as a rule we may say that the thickness and breadth is larger for the same weight than with the hempen rope. All these materials proving so expensive, it was proposed in 1830 by a mining authority in the Harz to employ iron wire in place of hemp, and this was done almost immediately with a large amount of success. It was soon introduced into Saxony and Hungary, but, strangely enough, in this iron producing country of ours it was introduced last, about the year 1840. A stand was made against it in the metalliferous mines, because of the easy manner in which such ropes are damaged in shafts not well prepared to receive them. The usual number of wires is six, sometimes hemp is put into the middle to fill up the spaces: in some early English ropes the wires were twisted too much, and this tended to break the rope. Flat iron wire-ropes have been used in our northern collieries with great success. About 1860 it was proposed that steel wire should be employed, from its great lightness enabling you to raise a greater amount of mineral from a given depth, and also to raise mineral from a greater depth than otherwise. Comparing iron wire with hempen ropes, there is the advantage in the first place of costing less, and of its lasting fully as long, in some instances longer. One cannot say that these advantages have fully established themselves with regard to steel, but in many instances it has served its purpose well. Whether it is that people do not like the look of a rope no thicker than your little finger, or whether it is that in so small a rope the abrasion of a small portion it makes a very great difference, steel ropes have not made their way with great rapidity. Whenever they are employed it is necessary not to make the mistake of passing them over too small a pulley, or of wrapping them on too small a drum. And in passing down the shaft extra care must be taken where there is likely to be friction, the rock must be boarded off with smooth boards, or kept off with pulleys, and when working on an inclined plane precaution should be taken that the ropes shall not be jerked off the pulley and drag on the plane. Where there is free drawing without guides, and the kibble has to be pulled into a side level, it must not rub on any sharp corner, and to avoid a twist and breakage it is best to have a small length of chain connecting the rope with the kibble. In the deep mines the weight of the rope is a serious matter, and it becomes a matter of question how far the weight can be reduced by the use of a different material, &c. If the lower part of the rope be strong enough to hold the kibble there is no necessity for it being as strong as the upper rope, which has to bear the weight of the kibble, and also the rope below; hence much may be done by reducing the ropes as you go down.

NORTH STAFFORDSHIRE MINING INSTITUTE.

At a meeting of members, held at Stoke-on-Trent, on Monday, the chair was occupied by Mr. J. MACDONALD, one of the Vice-Presidents.

After a short discussion on a paper read by Mr. Williamson, of the Cannock and Rugeley Company's Collieries, at a former meeting, on "Furnace & Fan Ventilation," Mr. T. E. STOREY, of Newcastle, read a paper on the same subject. In the course of his paper he said—Of the many systems of ventilating mines which have been advocated from time to time as substitutes for the furnace, we have not been able to find any so efficient as the Guibal and Waddell fans. What we require, especially in flint mines, is the means of increasing the ventilation at pleasure, in order to meet any emergency that may arise, and on that account mechanical ventilation offers superior advantages to the furnace. Under some circumstances, however, the furnace is most convenient, and possibly the most economical system that can be used. At the same time there are circumstances in which mechanical ventilation alone can be effectual. Whatever system is adopted it is necessary that the air should be properly divided or split, so that a sufficient supply of fresh air should be conveyed to every part of the workings, and not be allowed to travel very long distances in one body; that the air-ways should be spacious, so that the air may have a free and uninterrupted course, and not be liable to the large amount of friction, which is the result of stunted or protracted air-roads; that the return air should, where practicable, be conducted in the upcast shaft without coming in contact with or passing over the furnace fire; and that the stoppings and air crossings should be well and substantially built, so that the air may not escape before it reaches the extremities of the workings, where it is most required. He went on to state in detail the results of experiments which he had recently conducted with the furnace at North Staffordshire; next, experiments which he made some time ago at Wigan; and then experiments made by Mr. Nicholas Wood. These details he summarised as follows:

Experi- ments.	Tempo- rature of Water down- cast cas.	Air per minute.	Consumption of coal.		
			Cubic feet per airperlb.	Lbs. Cubic feet.	Power per horse- power.
No. 1	65 ... 120 ... 1:20 ... 90,000 ... 4 ... 6 ... 19,565 ... 17,00 ... 3.79				
2	43 ... 143 ... 1:10 ... 51,486 ... 4 ... 7 ... 10,962 ... 8,89 ... 1.83				
3	45 ... 130 ... 1:20 ... 208,466 ... 18,88 ... 11,068 ... 39,34 ... 2.08				
4	45 ... 93.5 ... 1:0 ... 184,750 ... 10,11 ... 16,320 ... 25,90 ... 2.56				
Cannock & Rugeley	... 1:10 ... 119,450 ... 7.8 ... 15,183 ... 24,75 ... 3.17				

He went on to say: Much has been said about the efficiency and economy of the fan as a ventilator, and before the reading of Mr. Williamson's paper my opinion was favourable to the Waddell fan as being more efficient and economical than the Guibal. The only experiments with the fan coming under my notice were those made some time ago with the Waddell fan at Eastwood, in Nottinghamshire, and with the Guibal fan at Staveley, in Derbyshire. The general results were as follows: Waddell fan (at Eastwood), 30 ft. diameter, 12 ft. opening into fan, cylinder 24 in. diameter, and 30 in. stroke. This fan running at 60 revolutions per minute, with water-gauge 1.7, gave 89,160 cubic feet of air per minute. The power applied to get this quantity was 41,023 indicated horse-power, the percentage of effective power utilised being 58.20. Guibal fan (at Staveley), 30 ft. diameter, 10 ft. wide, cylinder 25 in. diameter and 24 in. stroke. This fan running 60 revolutions per minute, with water-gauge 2.55, gave 108,900 cubic feet of air per minute, or 22 per cent. more than the Waddell; but the power applied to obtain this result was 73.83 indicated horse-power of engine, or 79 per cent. more power than the Waddell for the same number of revolutions. Percentage of effective power utilised 59.26. The consumption of coal was about 450 lbs. per hour, or 13,613 cubic feet of air per pound of coal used. The results given by Mr. Williamson with the Guibal fan are, however, much more favourable than those I have named. With a 40-ft. fan, making 35 revolutions per minute, water-gauge 1.5, we have 190,000 cubic ft. of air per minute. The power applied was 66.5 indicated horse-power of engine, or, in other words, Mr. Williamson obtains about 80 per cent. more air, with about 10 per cent. less power applied than the Staveley experiments, with the same description of fan, the percentage of effective power utilised being 66 per cent. The consumption of coal, taken at 484 lbs. per hour, gives 23,750 cubic feet of air per pound of coal used. There is a wide difference in the average results of these experiments, which

may be due in some measure to the length and sectional area of air-ways, but in both cases the air-ways are large and in good order. There must be some other cause to account for these differences.

In reply to questions, Mr. Williamson said he was more convinced now than he was some months ago as to the desirability of duplicating fans, as that was no part of his paper. He had read his paper he had put down a 40-ft. pan at the Pool Pit; the pit was covered in with iron. Instead of enclosing it 50 ft. he had enclosed it 30 ft. At the Cannock Wood Pit they were getting 12-ft. downcast shafts, and one 16-ft. upcast shaft, the one being nearly equal to the two. The air was split into nine sections at the Pool Pit, because it was not so much developed, and at present the air was only split four times at the bottom of the shaft. At the Cannock Wood Pit the fan made 35 revolutions, and gave 190,000 ft. of air. He attributed the difference to the extra splitting in the Cannock Wood Pit. They had 190,000 ft. of air, with a 14-in. water-gauge.

Mr. Lucas, of Silverdale, remarked that he had adopted the splitting principle without increasing the air to the same extent as Mr. Williamson; but, in reply to this, it was stated that there was a vast difference in the mines of Cannock Chase and North Staffordshire, the former being so flat in comparison with the latter.

The paper of Mr. Storey was ordered to be printed.

THE UNIVERSITY OF MANCHESTER.

The benefit that would accrue to the cause of education from the realisation of the project now in process of development for the elevation of Owen's College, Manchester, to the rank of a University is so little open to question that the obtaining of the necessary charter of incorporation can be a matter of a short time only, and the change of feeling which even a movement in this direction indicates is one in which all true friends of education must rejoice, especially as it has drawn out some statements from opponents to the scheme which are really amusing from the evidence they afford of the extreme weakness of the case for the opposition. At the present moment Owen's College occupies a somewhat similar position to that occupied by the University of London when Henry Maudsley wrote his memoir on "The Origin of Universities and Academic Degrees," now 40 years ago; but there is the all-important difference that Owen's College is prosperous and popular, whilst "Simeon" was but poorly attended and unpopular, not from any shortcoming in the quantity or the quality of the instruction offered, but because the character and importance of collegiate training was at that time so imperfectly understood by the masses that there was but little difficulty in leading large numbers to suppose that the granting of a charter to the Gower-street establishment would be creating a dangerous competition with Oxford and Cambridge, and that it was at those universities alone that sound instruction could be hoped for. The discovery that this claim was too wide was speedily made evident, and then followed a reaction, the ultimate result of which has been to create the belief in the minds of far too many that "paper universities"—as our Canadian brethren apply designated such as are constituted upon the model of the present University of London and University of Halifax—are a proper substitute for "teaching universities and the old-fashioned collegiate instruction," and that so long as paper universities exist "teaching universities" are, if not positively objectionable, at least superfluous.

The movement for the incorporation of Owen's College as the University of Manchester is precisely an effort to avoid the evils of the paper university system, and yet retain whatever advantage that system may possess as compared with any other method of applying educational tests, and securing or facilitating the acquisition of the largest amount of useful knowledge to the largest possible number. As the weakness of the opposition was quickly made apparent when the petitions for and against the University of London were referred to a Committee of the Privy Council, so the ability of conferring university powers upon Owen's College will be easily proved when the subject comes forward for public discussion; more especially as Englishmen now appreciate more than ever the wide difference between the graduates, as a class, of teaching universities and the graduates of paper universities—the former being unable to go through their undergraduate course without learning that however high a rank they may acquire amongst their fellow-students they still possess but an infinitesimal proportion of the sum of human knowledge; the latter learning nothing but the best mode of satisfying their examiners, and if they succeed in doing this—whether by honest study or by judicious cramming—they assume, and adopt a tone and demeanour in accordance with the assumption, that they are at once entitled to the highest rank among the learned, and that further knowledge is altogether unnecessary, although most persons competent to judge may entertain a very different view of the matter—in fact, they are much like the celebrated graduate of old who by a fluke had just secured the place of honour, and entering a London theatre at the same moment as a statesman to whom the whole house rose to applaud, cried to the no small amusement of his London friends—"Well, well; this is more than I expected. How is it possible that these good people should so soon have discovered that I am Senior Wrangler?" It is, of course, quite true as Mr. Roby states, though from his loose style of writing it is not quite clear whether he refers to teaching or paper universities—"There is a great deal of knowledge which is not testified by capital letters; and the capital letters are given indiscriminately to herds of boobies (those allotted to himself, for example, being M.A.) as well as to Adams and Munro." But he is not accurate in saying that degrees now are almost meaningless because "there is now no restriction on teaching, and because there are other modes of admission to the practice of law and physic." It is with perfect truth that Mr. Roby states that university degrees "were once the public evidence of knowledge, and the license to teach law and physic and to teach divinity and arts." But that which rendered necessary legislation for regulating the practice of law and of physic was the circumstance that notwithstanding the restriction on teaching which he alleges to have existed, a large number of persons had acquired an amount of knowledge equal to that possessed by the holders of British university degrees, and, what was worse, a large number who possessed no knowledge at all were also practising; and as the theological character of the universities shut out the former from the only legitimate license to practise, whilst the latter were dangerous to the public, the creation of a licensing power outside the universities became an absolute necessity. The existing teaching universities were not sufficiently liberal to entitle them to a power of examining for medical licenses similar to that which has been given to the Law Institution to examine for licenses to practise as solicitors, and it was with the almost unanimous assent of the medical profession that the present mode of ascertaining the qualifications to practise was determined upon. But the necessity of obtaining the actual license elsewhere has not at all lessened the importance attaching to the medical degree obtained from a university which is still, and probably long will be, recognised as an evidence that a suitable course of systematic study, which is even more valuable than the mere knowledge required for the license to practise, has been gone through. In some few cases the assumption is unquestionably wrong, but these cases are so few as not to affect the general principle.

The statement that Owen's College demands not merely the right to brand its own herrings, to borrow Prof. Huxley's metaphor, but the right to use a brand which is already in use elsewhere, is something more than unfair, although it is not, perhaps, absolutely untrue, for it is calculated to mislead those who are unacquainted with the facts of the case. The degree of B.A. and M.A., or their equivalents, are conferred by every university in every civilised country, and if an exclusive right to confer them by virtue of priority is recognised at all—though there is nothing to justify the claim—that right belongs to the Pope alone, or to the corporations empowered by him to grant those distinctions. It is beyond question that no British university can claim first user, and no university

has ever claimed exclusive rights to confer degrees in Arts. It is also dangerously delusive, and distinctly calculated to lead to false conclusions, to suggest that "if Owen's College be empowered to allow its successful students to write B.A. and M.A. after their names there will be danger in the public holding the letters to signify all that public opinion is accustomed to understand by them; for the opinions even of those opposed to the granting of the charter might prove beyond question that Owen's College holds a position which would ensure its degrees ranking as high, as an indication of the requirements of the possessors of them, as those of any degree conferring institution in the kingdom. It is declared that neither Owen's College, nor any other institution should be encouraged to seek, with however worthy motives, a fictitious authority by conferring distinctions which public opinion, careless and uninformed, will be certain to estimate above their real value. There is an evidence of Burlington Gardens influence about these assertions which is also transparent as to deprive the assertions themselves of most of their sting; but it may be worth while to state that so far as an outsider can judge, the prime object of the Owen's College movement is to avoid those evils which the fictitious authority necessarily exercised by a paper university like the University of London unavoidably produces.

That the establishment of London University has proved of great advantage to the cause of education in this country is universally acknowledged, but that it should be a permanent institution in its present form is scarcely anticipated by its warmest supporters. The views very generally entertained by impartial men interested in education are admirably embodied in the concise and emphatic remarks of Prof. Frankland that the longer he lives the more does he become impressed with the value of the direct influence of teachers upon students, and that of students upon their fellows, and that the London University has amply proved itself to be a present necessity, but there are many, and himself among them, who whilst fully appreciating the benefits it has conferred, would be glad to see it gradually superseded by local universities, such as it is now contemplated to found in Manchester. At the date of the establishment of the University of London collegiate education was practically closed against all but members of the Church of England, which at that time had not been disturbed by Tract 90 or any similar errors, and although it would have been a matter for sincere regret if anything should be done to weaken that Protestantism of which the Church is the chief representative in this country, the founders of the new university entitled themselves to the warmest thanks of the entire community for exerting themselves to place an equally high-class of instruction within the reach of non-conformists, and more especially of the Unitarians and Quakers, not with a view of competing with the then existing universities in the matter of teaching, but for the purpose of opening the learned professions, the only passport to which was a university degree, to the entire community regardless of the religious convictions of the candidate; and that the early progress of the university was less rapid than had been anticipated was due to the fact that prejudices had to be overcome, which happily no longer exist, and that new fields of labour had to be found for those who had graduated there.

The degeneration of the original London University into a paper university was the result of its comparative adversity, which enabled institutions that sought affiliation to dictate almost their own terms, and hence arose the uncongenial conglomerate which required the charter of 1863 to convert it into anything approaching utility. From the widely dissimilar views and position of the several colleges associated, the empowering of the heads of each to take part in the government of the University to be consolidated by the new charter was out of the question, and the only obvious way out of the difficulty was to create an independent examining board, practically ignoring the colleges as corporations, and selecting only such individuals connected with each as seemed worthy. To the more honestly conducted colleges the change was a great blow; it deprived them of the benefits of fair competition, and as memory rather than merit henceforward determined the gaining of the degrees, naturally caused the greatest dissatisfaction in every college wherein the object is to teach the student, and not merely to prepare him for examination. The University of London costs the country in round numbers 10,000*l.* per annum, or about 10*l.* for each candidate who presents himself for matriculation, and the extent to which the university has aided the diffusion of the higher kind of knowledge may be judged of from the fact that in the 31 years ending 1869 only 238 students had presented themselves for the M.A., and only 152 had obtained the B.A., essential to enable them to proceed to the higher degree in Arts, or to any degree whatever in the other faculties. Even with the relative disadvantage of affiliation with a Government-supported paper university the progress made by Owen's College has been marvellous, and it is not unreasonably anticipated that by its incorporation as a teaching university the rapidity of its progress will be increased, the indisputable accuracy of such views as those expressed by Prof. Frankland fully justifying those anticipations. He does not hesitate to say that the power over its courses of study and examinations which would be gained by the transformation of Owen's College into a teaching university holds to be of great importance in the securing of sound knowledge as distinguished from cram. In science, at all events, he is convinced from a good deal of practical experience on both sides that the testing of students by outside examiners is almost an unmixed evil. It is unfair to earnest and genuine students, and offers a high premium to superficiality and mere effort of memory. As a preliminary to applying for the new charter the executive of Owen's College have wisely taken the precaution of ascertaining the views of more than two dozen prominent educationalists in order to know the nature of the objections to be met, and the quarters whence they are likely to come; and it is gratifying to learn from the correspondence that has been printed that only two disinterested persons have given unfavourable replies, and that most of the five opponents so qualify their objections that they will not be hard to meet. The executive of Owen's College has shown excellent claims for a university charter, and by continuing their exertions will, no doubt, obtain it without unnecessary delay.

MINERALOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—The general meeting of this society (to the formation of which reference was recently made in the *Mining Journal*) was held in the University, Glasgow, on Wednesday (Prof. Heddle, M.D., in the chair), when the Chairman delivered an interesting address on the Scotch minerals, how and where to find them. There were four localities, he said, where the mineralogists should search. The first of these was the junction of strata, where they might hope to find minerals in veins of metamorphism; the second was faults; the third, escarpments and cliffs; and lastly, hill-tops. The greatest number of interesting and rare minerals in Scotland, and, in addition, the greatest amount was obtained in the limestone strata at its junction with the enclosing rock, and that enclosing rock was almost always chert. He found that the chief limestone strata, and, as a consequence, the chief minerals, belonged to two localities—the first running down along the west coast of Scotland, the second running down from Buff and Portsey to Glenluce. Whenever the limestone was peacefully reburied upon the strata below, where there was no fracture of the strata there they did not form; when, however, on the other hand, the strata were fractured, and when at the same time the limestone was thick and massive, then it was no longer an economic substance, it was crystalline limestone—it was marble. There are instances of these phenomena, sometimes in the rock. An examination of the lava led him to suspect that the colloidal condition of the lava had a greater amount of volatile heat than the crystalline; if that was so, Professor Heddle had a long way to explain metamorphism, to which he had alluded. Professor Heddle subsequently stated that in course of his researches he had discovered 21 minerals new to Great Britain, and six or seven new altogether. —Dr. Huntington, of Trinity College, Dublin, explained to the meeting that in the course of an investigation of a collection of lava from Vesuvius the question arose, how much of each mineral is present in the lava? He ascertained that the mine was combined with a substance like paste, and he came to the conclusion that before they would crystallise they would each appropriate to itself the quantity of element which they wanted for crystallisation, and as long as their affinities were unsatisfied they remained in a melted state. He, therefore, arrived at the conclusion that when a rock crystallised the maximum of minerals would form with a minimum of paste, and the principle was borne out by the results of chemical investigation.

The Critical Point in the Consolidation of Granite was discussed in a paper by Mr. H. C. Sorby, the president of the association. It appeared to him that this point was very closely connected with the critical temperature at which highly heated and compressed steam would condense into an equal volume of highly heated and expanded liquid water. Rocks melted under great pressure probably contained water either dissolved as a gas in a liquid or in the state of a fused

hydrate. On cooling down to a lower temperature the crystallising out of minerals would almost necessarily set free the previously combined water. As long as the temperature was above the critical point it would necessarily remain more or less disseminated in the rocks as a highly compressed steam, but as soon as the temperature fell below the critical point it would condense into highly expanded liquid water. The temperature at which this would occur was imperfectly known. The theoretical deductions agreed remarkably well with the microscopical structure of the Pouza granite. The other communications were a Note on (presumed) Lamotte, from Prof. A. Liveridge, of Sydney University; Notes from an old catalogue of minerals, by Prof. Alt; and notes on the occurrence of adularite and on black tourmaline at St. Austell, Cornwall, by Mr. J. H. Collins, the secretary. Thanks having been voted to Prof. Young for the use of the room, the meeting separated.

THE AMERICAN IRON TRADE.

The annual report of the American Iron and Steel Association, coming down to Jan. 1 of the present year, which has just been presented to the members, has evidently received the same amount of care and attention in its preparation as Mr. JAMES M. SWANK, the able secretary of the Association, has bestowed on those of previous years. Although the views put forth by Mr. SWANK may not be strictly in accordance with those of certain classes in this country, it is beyond question that he has succeeded in collecting facts, and that his conclusions arrived at, from the careful consideration of them, are not so open to condemnation as some would have it supposed. He commences by demonstrating that there is no international free trade, and that Great Britain is alone among leading nations professing devotion to free trade, and he has been virtually compelled to prove this to show the fallacy of the opinion that has been industriously disseminated that the policy of protecting home industries by means of duties on imports of foreign commodities is almost exclusively confined to the United States. He asserts, and the accuracy of his statement cannot be denied—This is an error. Protection is the policy of many nations, Free Trade the policy of very few. Of all the leading nations of the world Great Britain is the only one which professes to practice absolute free trade in the exchange of commercial products, and even Great Britain does this only in a qualified sense. France, Germany, Austria, Russia, Italy, Belgium, Holland, Denmark, Sweden, and Switzerland have protective tariffs. Even unhappy Spain is not without its tariff on imported goods, and impoverished Turkey now admits that to the absence of protection is her present condition largely due. Brazil, the leading nation of South America, imposes duties on imports which average over 40 per cent. of their value. All the South American Republics impose similar duties. Many of the colonies of Great Britain refuse to follow the example of the Mother Country, for they impose protective duties, the colonies of New South Wales and Victoria being especially devoted to the protective policy. In India and Canada there are strong parties favourable to the development of home industry by protective duties, and their views have found expression in local legislation. Only in Germany is there any disposition to surrender the protective policy, and there the effort to establish partial free trade is being most strenuously resisted.

Mr. SWANK points out that the tariff on iron rails in 1869 in the leading continental countries of Europe was—France, 47*s. 8d.*; Germany, 48*s. 9d.*; Austria, 97*s. 6d.*; and Russia, 39*s.* per ton; and that free trade and revenue from customs are absolutely incompatible when one country exchanges with another products that are common to both. There may be revenue, but there is no free trade. France, he reminds his readers, has been remarkably consistent in her devotion to the protective policy since the days of NAPOLEON I, and has gone further than the United States has ever gone. France has positively prohibited, and does now prohibit, in her general tariff the importation of many articles which her own people can produce. The United States cannot export to France to-day upon any conditions whatever refined sugars, tobaccos for private account, certain kinds of cast and forged iron, cutlery, copper in certain forms, certain chemical products, common soaps, fine stoneware and earthenware, glass bottles, goblets, &c. Her tariff is eminently a protective one, as is her whole fiscal system. A bounty to the exporters of French sugar encourages its production by facilitating its introduction into foreign markets. That the balance of feeling in Europe in favour of free trade can be claimed in the face of such facts as Mr. SWANK puts forward seems somewhat remarkable; and he mentions the curious fact that the "Times," less than a year since, frankly admitted the progress of protective ideas throughout Europe, particularly instancing their spread in Germany, Austria, and Italy, and it accounted for the fact by declaring that the sudden spread of representative institutions through Europe during the last 12 or 15 years is suggested as the source of this renewed strength of protection. The logical inference from this suggestion must then, as Mr. SWANK remarks, be true; that free trade is the naturally ally of that governmental policy which restricts the spread of representative institutions—a term synonymous with civil and religious liberty.

British theoretical free trade, says Mr. SWANK, means the free exchange of commodities between nations. It nowhere exists; it is a myth. The only real free trade ever known to civilised nations is that which governs the exchanges between the people of the same country. It is the only kind of free trade that in the nature of things ever can exist, for each nation must care for its own interests, and these interests are never identical with the interests of other nations. The truth of this is beyond question; but Mr. SWANK is not at all times equally careful to put matters in their true light. In the matter of intemperance there is really little to choose between the working men of America and those of Great Britain, and the American and British Commissioners to the Paris Exhibition of 1867 very readily acknowledged the degraded position of the workmen of both their countries as compared with the working men of France, who, although by no means over abstemious, avoid drunkenness almost completely, and would certainly expend in intoxicating drinks a smaller proportion of his weekly wage during the week than an English or American workman would expend in a single day. Now, Mr. SWANK may fairly be called upon to explain why the working classes in America are such disgusting drunkards if his statement be true that the British working man drinks because British manufacturers offer to him the public-house as a substitute for the school-house and the church, and as something better than his cheerless home. As he states this he should undertake to prove that American working men are more regular attendants at church than their brethren in this country; and this proof cannot be given—it might also be added that on the Continent of Europe, where the working men are more temperate and certainly richer, they trouble churches infinitely less than either English or American workmen, but are not less moral and truthful. These are facts which Mr. SWANK would do well to account for.

The second portion of the report describes the Industrial Policy of the United States; and, in giving an outline of the policy of that country, Mr. SWANK remarks that protection is a policy, and not an expedient. If it is right, he says, the reasons for believing in it and maintaining it should be so clear and so conclusive that its friends will never be tempted to apologise for it, nor its enemies be able to delude the unthinking with stories of its oppressive burdens; it is a plain question of the duty of a nation to encourage the industry of its own people in preference to the industry of an alien people; it is a question of the duty and interest of a nation to develop all its resources rather than allow some of the most important of them to remain undeveloped; it is a question of diversified employments and unbounded possibilities for a nation capable of great achievements rather than a limitation of its powers to such occupations as will prevent it from becoming independent, and its people from going forward. It is not a tax upon one industry for the benefit of another, for its design is to impose taxes upon foreign producers, that domestic consumers may obtain cheaper commodities, and this is its effect. The historical sketch of the American Iron Trade, which forms the next section of the report, is prepared with the same amount of care as all other portions of it, and the report closes with elaborate statistics, upon the possession of which the members may well be congratulated.

The American iron trade in 1876 was less prosperous than during the preceding year, but still a large amount of business was done. The production of pig-iron was 2,266,581 tons—being a decrease of 422,832 tons, or more than 15 percent. The production of all kinds

of rolled iron was 1,890,379 tons—an increase of about 50,000 tons as compared with the preceding year. This is attributable entirely to the increase in the make of rails, other kinds showing a small decrease. The ingots of Bessemer steel produced were 375,517 tons, and the rails 290,863 tons in 1875, and 191,933 tons of ingots and 144,944 tons of rails in 1874. The aggregate production of all kinds of steel other than Bessemer was 61,058 tons, against 49,681 tons in the preceding year. The value of the ore and pig-iron, the production of Lake Superior in 1875, was \$5,788,763. Full details are furnished showing how the totals are made up, and the variations for the last 30 years are graphically shown in order that they may be seen at a glance. Both Mr. SWANK and his indefatigable assistant, Mr. COPE, have well earned the thanks of the Association as well as of the whole trade for the admirable manner in which they have performed their work.

GOLD MINING IN VICTORIA.

From a just published report to the Colonial Office we learn some details of interest respecting gold mining in Victoria, and we are under great obligations to the Government statistic for a mass of other information. From the first discovery of gold in 1851 to the end of 1873, and including also 1,267,241 ozs. taken away overland in the four years 1852-1855, and passed through the customs of the adjacent colonies, the whole quantity raised in Victoria has amounted to no less than 43,258,205*1/2* ozs., representing, at 4*l.* per oz., a total value of 173,032,821*1/2*. The foregoing calculation has been based on the assumption that the total yield of gold is equal to the amount received at the Mint added to the Customs returns of gold exported. According to the estimate which has been made, the quantity of gold minted and exported would, if divided amongst the mean number of miners employed in 1872 and 1873, represent an average of 93*s. 17*1/2*d.* per man in the former year, 93*s. 16*1/2*d.* per man in the latter. The number of steam-engines used in gold mining had fallen off from 1161 in 1872 to 1151 in 1873, but in the same period the aggregate horse-power had increased from 25,014 to 25,100. In 1872 379 steam-engines were employed in alluvial mining, and 782 in quartz mining. In 1873 the figures were 362 and 789. In 1872 the total number of machines of all descriptions in operation on the gold fields was 5779, the aggregate value of which was 2,098,574*1/2*. In 1873 the machines numbered 5699, and the estimated value was 2,131,188*1/2*. The auriferous ground worked upon was estimated to amount to 1026 square miles in 1872, and to 1050*1/2* in 1873. The aggregate value of all the gold mining claims in Victoria was estimated to be 11,820,139*1/2* in 1872, and 12,431,241*1/2* in 1873.

In 1873 there were 95 leases in force for the purpose of mining for metals and minerals other than gold, the area leased being 15,518 acres. These metals and minerals include antimony, coal, copper, and ores of copper, flagging, galena and copper, kaolin, lignite, silver, silver and lead, silver, lead, and copper, slate, slate and flagging, slate and freestone, iron, red ochre clay, and tin, and ores of tin. With regard to the last-named, we observe that the number of mines leased increased from 2 in 1872 to 30 in 1873.

According to estimates made in the mining department, the following are the values of metals and minerals other than gold raised in Victoria from the period of the first discovery of gold in 1851 to the end of 1873:—Silver, 679*1/2* *l.*; tin, 305,586*1/2*; copper, 584*1/2*; antimony, 86,163*1/2*; lead, 3090*1/2*; iron, 288*1/2*; coal, 3570*1/2*; lignite, 1933*1/2*; kaolin, 744*1/2*; flagging, 32,688*1/2*; slates, 72*1/2*; magnesite, 12*1/2*; diamonds, 103*1/2*; sapphires, 180*1/2*; total, 455,023*1/2*.

MINES AND MINERALS IN CHILI.

One of the best and most complete official reports on any country that we remember to have seen for a long time past is that on the progress and general condition of Chili, by Mr. HORACE RUMBOLD, her Majesty's Secretary of Legation in that republic. The scope of Mr. Rumbold's report is so extended that the greater part of it naturally deals with matters upon which we do not touch in these columns, but still it contains a great deal of information about mines and minerals that will be interesting to our readers, and it is to that portion alone to which we propose to draw attention. In dealing with the general description of the country, Mr. Rumbold remarks that the large northern provinces of Atacama and Coquimbo, the former of which is nearly made up of sandy deserts replete with mineral wealth, and extends over 5° to the limits of Bolivia, form the mining division of the country. The richest mines are to be found between Caldera and Mejillones de Bolivia, over a district covering some 240 miles. Here are the silver mines of Puquios, Tres Puntos, Chanarcillo, Chimbolo, and numerous others, and here, too, are the newly discovered mines of La Florida, from which great things are expected. Every conceivable mineral product is found in this vast region—silver in abundance, copper, gold, iron, nickel, and cobalt, not to mention great "pampas" or stretches covered with nitrate of soda, rock salt, and borax, these latter being of recent discovery, and, when analysed, found to contain a large proportion of iodine. In this wilderness were made some of the largest fortunes of the republic, and there, too, many a fair estate has been engulfed in ill-advised mining ventures. The great discoveries made at Caracoles, in Bolivian territory, have somewhat diverted public attention from the mines of Atacama, but the wealth of those mines is none the less remarkable, and it will suffice to say of them that in the thirty years from 1843 to 1873 they yielded \$201,826,210 worth of mineral produce, or an average annual yield, in round numbers, of 1,320,000*l.* In the southern portion of the province is the Freirina, the greatest copper district in the world, whose rich mines of Carrizal have influenced the price of the commodity in all markets. The adjoining province of Coquimbo, too, abounds in the same metal.

Turning to Mr. Rumbold's observations on mineral exports, which open with a carefully detailed tabular statement showing the development of the exportation of mining produce between 1844 and 1873, we learn that in that period the yield of the Chilian mines amounted in value to no less a sum than \$369,440,092 or 73,888,018*l.* The mineral exports doubled between 1844 and 1852 (rising from \$36,188,072 to \$7,807,106), up to which last-named year the mines of Atacama and Coquimbo had been but partially worked. In the course of five years more (that is in 1857) they had doubled again, and have since gone on increasing in value with some variations, but not in the same rapid proportion. The mining province of Atacama, and in particular the district of Copiapo, from which nearly two-thirds of the Chilian mineral produce are derived, is said to show of late marked signs of exhaustion, and the great falling off in the number of mines in working would seem to bear out the assertion. The mines registered in the province in 1869 numbered 649 in all, of which 250 were classed as silver, 29*1/2* as copper, 10 as copper and silver, 27 as gold, and 3 as gold and copper mines. Of these, however, only 399 were being worked in 1869, the hands employed in them being 7732 in number. In the following year the number of mines in working had already dwindled down to 142, with 3641 hands, and in 1872 it was still further reduced to 129, with 2866 hands. In three years, therefore, the mining operations in this province had apparently decreased by two-thirds. But the mines abandoned cannot have been of real importance since the production of Atacama in 1872 reached the figure of \$10,317,609—a large return as compared to the average annual production for 30 years (1843 to 1872) \$6,727,544. The following were the mineral exports from the province during this period summed up at intervals of five years:—1843 47, \$9,919,163; 1848 52, \$20,176,693; 1853 57, \$33,960,976; 1858 62, \$42,611,601; 1863 67, \$45,176,634; 1868 72, \$19,981,173; total, \$201,826,240. Of this amount \$156,697,962 worth was shipped from the port of Caldera, and the remainder from Huasco. Copper figures in the above sum to the following amount:—Bar copper, \$11,352,513; copper ingots, \$55,297,186; copper ores, 32,358,399; total, \$99,508,098. Of silver there was exported:—Silver ores, \$14,205,195; bar silver, \$75,411,354; total, \$89,616,649.

In the northernmost district of Atacama is situated the group of silver mines known as La Florida. These mines, which are of recent discovery, extend over a zone some 12 kilometres in length, and, according to the latest accounts, are of exceeding richness.

They are about six hours journey distant from the coast, but a comparatively short extension of the railroad from Chanaral would bring them within an hour and a half of that port. If the last accounts received from these mines be correct, Mr. Rumbold says they will soon swell the exports of silver from Chili to an extent that must lead to a further depreciation of that metal, and thus greatly influence the commercial exchanges of the Republic. The aggregate exports of silver ores and bar silver from Chili in 1872 and 1873 are officially put at \$1,792,321 and \$2,980,448, but it is extremely difficult to arrive at the exact amount of silver actually produced in Chili proper, as the Caracoles Mines in Bolivia mostly find their way to Copiapo, where they undergo the process of amalgamation previous to shipment for Europe.

At the great copper smelting works at Guayacan the monthly out-turn of bar copper exceeds 60,000^l. in value, while the smelting works at Lota, south of Concepcion, are of nearly equal importance; these latter nominally belong to the Lota Coronel Company, but are in reality the property of the Cousino family; at Lota, too, the same family owns the largest coal mines as yet worked in Chili. Three more companies—the Puchoco Establishment, the Puchoco Company, and the Playa Negra Company—work other extensive mines in the same neighbourhood at or near Coronel, while further south, in the bay of Arauco, are the coal mines of Lebu, belonging to Don Maximiano Errázuriz. Coal has also been found in the province of Valdivia and in the Island of Chiloé. Indeed, numerous tracts of the southern coast districts would appear to be carboniferous. Owing, however, to the inferior quality and to the heavy cost of extraction, Chilean coal must for some years to come compete at a great disadvantage with that from the United Kingdom, which is carried at nominal freights by sailing vessels in quest of return cargoes. The rise in the price of British coal gave an impetus for a short time it seems to the Chilean collieries, but its effects proved to be only transitory.

Mr. Rumbold appends to his exhaustive report on Chili three valuable and elaborate tabular statements, showing the exports of copper produce during 1874 as compared with those of 1873, the exports of copper produce in 1875, and the exports of nitrate during the same year.

REVIEW OF THE METAL TRADE AND MINING FOR METALS TWO-THIRDS OF THE YEAR 1876.

Two-thirds of the present year have passed away, and the Government reports of the state of commerce generally and of metals in particular have just appeared. They do not, as a whole, remove, or even relieve, the mercantile despondency which has prevailed throughout the eight months which have transpired. The impression is very prevalent that the character of this year's commerce, and this year's mining, is determined by the state of things now recorded; and that the remaining third of the year will not at all, or not much, alter matters. We are not so sure of this. The exceeding cheapness of money, the soundness with which trade is generally conducted, the economies which have been achieved in production, the comparative absence of waste and extravagance on the part of the producing middle classes, using the phrase in its fullest comprehensiveness, inspire hope that before the seared leaves of autumn forsake their branches things will be better. At all events, there is every likelihood of higher prices for metals, and more active mining; for stocks are low here and abroad, production on the part of the rivals of our miners in other lands has diminished; and, after all, there has been no signal decline in the business transacted in metals, so far as transactions with other countries are concerned, except in iron; and in Belgium, France, and Germany the iron miners and masters have complained as long and as loudly as our own. There has, however, undoubtedly been presented in the Government returns grounds for explanations and conjectures, such as our long experience permits.

For the two-thirds of the year the value of our imports was 251,557,806^l, as compared with 250,505,786^l in the first eight months of last year, and 252,076,833^l during that space of time the year before. Our exports are valued at 133,257,330^l against the larger sum of 149,511,844^l in 1875, and 159,477,052^l in the same space of 1874. These figures show a serious decrease in the value of our exports, but the difference in the worth of imports is not material. The imports of all commodities were for the month of August last valued at 33,810,802^l; during the same month in the two previous years retrospectively they were of the value of 31,200,145^l (1875), and 32,317,228^l (1874). The exports were worth 17,962,864^l last month; 19,418,876^l in August, 1875; and 20,503,756^l in that month of 1874. The general exports were of the value of 133,257,330^l for the two-thirds of the year which has transpired, against 149,511,844^l in the corresponding period of 1875, and 159,477,052^l in 1874. The main cause in the falling off of the value of exports was the decrease in the value of iron and manufactures from iron. The reader will please to observe how far the figures of the metal tables agree or differ from the general state of things, which will at once enable him to determine for himself whether the British miner has need to be discouraged, always, of course, iron excepted, which has been depressed and depressing.

Perhaps we had better take this metal first. Our iron and steel imports for the eight months were valued at 2,234,000^l round numbers, and for the shorter time at nearly 400,000^l, showing a difference with the corresponding portion of previous years of no real importance. Our exports of imported iron and steel amounted in round numbers to 750,000^l, for the eight months, and to nearly 120,000^l, for August—no great alteration. The exports of British iron fell during the two-thirds of this year signally, from 21,037,579^l in 1874, and 17,783,649^l in 1875, to 13,755,073^l. During the month of August in each of the three years the figures stand respectively—1874, 2,620,635^l; 1875, 2,834,837^l; and in 1876, only 13,755,073^l.

Turning to the superior metals, copper in the greater period was imported to the value of nearly 23 millions. Imported copper was "re-exported" to the worth of 909,000^l, and the exports of British copper were valued at 1,917,177^l—a falling off as compared with the corresponding period of 1875, when the value was 2,084,569^l, and with 1874, when the estimate was 2,116,404^l. This is a decided decline in the export of British copper, and the misfortune ranged over every department—unwrought, wrought, and mixed metal or sheathing.

During last month there was rather an improvement, but the values were lower than in the corresponding month of each of the two preceding years. This state of affairs is not quite so bad as it looks, as of the copper which we imported we exported 50,000^l. worth more than in the previous year, although not so much as we usually do. But the imports of regulus and wrought or unwrought copper were about half a million less. Of ore we imported about 150,000^l. more, which, of course, would not be the case if our miners at home raised sufficient quantities. During the month the proportion of business transacted in the eight months was pretty equally maintained. In the eight months tin was received from abroad to the value of 869,612^l, against 1,063,880^l in the same space of time last year, proving once more that Cornish mines and miners have not suffered from the competition of foreign tin. During the month very slightly more than the average value appears in the tables.

These remarks are further justified by the fact that of what tin we did import we shipped off again to the value of 331,750^l, against 240,370^l. last year, and 164,315^l. the year before, so that our imports are decidedly decreasing, and our shipments of it increasing at a prodigious ratio, destroying the idea of foreign competition for this metal in the home market.

The export of British tin has declined in the last two years about in proportion to the falling off of our exports in general. The value this year, so far, has been 276,705^l, last year it was 349,766^l, and 506,125^l. the year before that. The decline has mainly been with Turkey, Russia, and the United States.

Our import and consumption of foreign lead have been equivalent, for we sent none away. The value was 1,136,406^l, differing very little from last year or the year before. During the month the worth of foreign lead was 140,033^l, a little less than in August, 1875, and considerably less than in that month 1874. The shipping off of British lead for two-thirds of the year was to the extent of 547,498^l,

a comparative increase of 20,000^l. In the month the value was 89,771^l, a falling off from last year of about 200,000^l, and a gain of the like sum on the year before. There was no change in the zinc trade since our last communication sufficient to notice.

On the whole, we maintain, as we have done all along during the present depression of the general export trade, that investors and workers in mines have no cause of special discouragement, but, on the contrary, the aspect of affairs inspires hope.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

Since my last report (Aug. 24) with the exception of shares in oil concerns, all departments of this market have been quite neglected. In shares of iron and coal concerns, however, it is very satisfactory to hear that the extremely low prices lately current are attracting capitalists to investments in these the most important departments of British trade, the long continued depression in which will most certainly pass away. As an instance of the recuperative power of mineral enterprise the oil trade is particularly noticeable, which has come out during the past two years from a state of unexampled depression, perhaps worse than even now is, to a state of prosperity, almost the only gleam of sunshine in the surrounding gloom. Shott's Iron, the most important company in Scotland, has this year been unable, as will be seen by the report given elsewhere, to earn any dividend for the shareholders, and it will be remembered that the 5 per cent paid last year was not viewed as earned by all. Benhar dividend is to be 8 per cent, against 14 per cent. 12 months since, and 9 per cent, six months since; notwithstanding the shares are about 4s. higher for old and 10s. for new. On the latter a call of 1s. is payable on Oct. 1. Dividends also are recommended of 10s. 6d. per share on Charleton Brick; 18s. 9d. and 15s. per share respectively on Bolckow, Vaughan, A and B, as interim on account of year ending June 30 last (but a call of 5s. per share is also intimated on A shares, payable Sept. 20 next); and 6s. per cent. on Pearson and Knowles B shares, which are 50 nominal. Ebbw Vale meeting will be held on the 8th inst., and that of Sheepbridge on the 11th inst. At the latter the report will be gloomy, as the shares have fallen to 10s. to 12s. prem.; new, 10 to 11. Omos and Cleland have improved 2s. 6d., on the report (noted elsewhere). South Wales Smelting and Colliery shares are offered 4s. lower, at 5s.; and Crown Colliery Debentures also offered at a reduction.

The other movements are reductions—of 3s. 10s. on Bolckow, Vaughan, "A," 15s. on Nant-y-Glo and Blaina (preferred), 12s. 6d. on Ebbw Vale, 1s. 8d. on Marbella, and 1s. on Monkland (ordinary). Monkland (preference) has been offered, but is unaltered, and Nant-y-Glo and Blaina (ordinary) has been offered. Altamari are at 5s. Andrew Knowles and Sons, 30s. prem. Bilbao Iron Ore, 3s. 20s. ditto; "B," 35s. to 38s. Bradford Brick and Tile, "A," 15s. ditto; "B," 5s. Brynmawr and Carnforth Iron, 11s. to 12s. Cardiff and Swansea, 30s. to 40s. Chapel House, 6s. 6d. Consett Iron Ore, 12s. prem. Charleton Brick, 9s. Clew Hill, 1s. 6d. Crown Preserved Coal, 40s. to 60s. Darlington Iron, 30s. Ivy House and Northwood Colliery, 20s. dis. John Bagshaw and Sons, 9s. 6d. Llynn, Tondu, and Ogmore, 18. Mersoy, part to 20s. prem. Newport Abercarn, 7s. North of England Coal and Iron, 8. Park Coal, 29. Pelsall Coal and Iron, 7 to 8. Richards and Co., 3d. Rhonda Meryth Colliery, 13 to 15; ditto (new), 4 to 6. Rhymney Iron, 22 to 23; ditto (new), 6s. to 7s. Sandwell Park, 23s. to 24s. ditto (new), 13s. prem. Scottish Australian, 32s. 6d. Spon Lane, 20s. dis. South Wales Colliery, 7 to 9. Stain Lane Colliery, 10s. dis. to 12s. Staveley Coal and Iron, "A," 32 to 33 prem.; ditto "B," 5s. 6s. prem.; ditto "C," 9s. to 9s. and ditto "D," 15s. 6s. Swan Banks Brick and Coal, 15. Tredegar, "A," 17 to 18; ditto "B," 23 to 24. Ulverston Mining, 9s. to 10s. West Cumberland Iron and Steel, 8s. to 9s. West Swansea Collieries, 4. Workington Malleable Iron, 15 to 16.

In shares of foreign copper concerns, Cape have fallen 40s., Russia 10s., and Panucillo 5s., but Tharsis have advanced 5s. ditto (new), 3s. 9d. Yorke Peninsula have been quite neglected, notwithstanding the receipt of another favourable report from the mines, not to mention the evidences of progress at the company's Aberdeen township. English and Australian Copper are at 27s. 6d. to 32s. 6d., and New Querida 7s. to 8s. Linares Lead have been good, now 8s. buyers. Home mines, a dead letter. Dunsley Wheal Phoenix are 1s. 3d. lower on 9s.; Glasgow Cardon 1s. lower on old, and 9d. on new shares, but each are now ex div. Plymton is wanted at about 5s.; it is really quite improbable this mine will collapse when everything in the lead way is looking so promising. The shareholders are the people who know its merits best, and should find the money easy enough, particularly as outsiders are most likely to do so at present. Aberdaulnart are at 7s. 6d. to 10s.; Bedford United, 12s. 6d. to 17s. 6d.; Cargill, 8s.; Cathedral, 27s. 6d.; East Van, 9s.; Glenroy, 5s.; Glyn, 5s. to 6s.; Great Laxey, 18 to 19; Great West Van, 10s. to 12s. 6d.; Gunnislake (Clitters), 5s.; Killifret, 7s. 6d. to 12s. 6d.; Ladywell, 22s. 6d. to 27s. 6d.; Marke Valley, 32s. 6d. to 37s. 6d.; Mwyndy Iron Ore, 3s. to 40s.; North Laxey, 1s. to 17s. 6d.; Parry's Mountain, 1s. to 14s.; Pennerley, 27s. 6d. to 32s. 6d.; Pennant Brynites, 8s.; Penruthal, 11s. to 12s.; Prince of Wales, 4s. to 6s.; St. Patrick, 2s. 6d.; Tankerville, 10s. to 10s.; Unity Wood, 7s. 6d. to 12s. 6d.; West Maria, 5s.; West Tankerville about 30s.; ditto (new), 4s. to 6s. In shares of gold and silver mines, Richmonds have declined 20s., the last two week's run having declined to 85s. 600 and 850,000, though it is said the mine is steadily improving. The advices from Eberhardt and Aurora, and St. John del Rey are about as usual, but Pestarena United shows the comparatively excellent return of 366 ozs. for the month of August. Australasia mines are at 12s. 6d.; Cedar Creek, 10s. to 15s.; Chontales, 3s. 9d. to 8s. 3d.; Don Pedro North del Rey, 1s. 3d. to 2s. 6d.; Eberhardt and Aurora, 8s. to 9s.; Emma, 10s. to 11s. 3d.; Exchequer, 4s. to 4s.; Flagstaff, 32s. 6d.; Hornachos, 15s. 6d. to 18s. 6d.; Langdale's Chemical, 5s.; Lawes Chemical, 7s. 6d. to 8s. 6d.; Marbella, 5s.; Marbella (Gold), 8s.; Pestarena United (Gold), 5s. to 6s. 3d.; ditto (new), 2s. 6d.; Rica, 1s. 6d.; buyers; St. John del Rey, 3s. to 35s.; South Aurora, 7s. to 9s.; Sweetland Creek, 4s.; buyers; Thornhill Reef (pref.), 10s.; and Tecomá, 5s. buyers. In shares of oil concerns a considerable business has been transacted at every instance advanced prices. Upfahls have improved 2s. 15s.; Dalmeny, 5s.; and Young's Paraffin, 2s. 6d. There have also been enquiries for Oakland and West Calder shares. Price's Candle remain at 11 to 12. In shares of miscellaneous companies, Scottish Wagon (new) have improved 2s. 6d.; no change in others, and little doing. Bede Metal and Chemical are 5s. dis.; British Agricultural Association, 10s. to 20s.; ditto (new), 5s.; Hopkins, Gilkes, and Co., 9s. to 9s.; Langdale's Chemical, 5s.; Lawes Chemical, 7s. 6d. to 8s. 6d.; Newcastle Chemical, 5s. dis.; and Palmer's Shipbuilding and Iron, 15s. 6d. A dividend of 5 per cent is recommended by the London and Glasgow Engineering and Iron Shipbuilding Company, carrying forward 180s.; at the corresponding period last year, 10 per cent, was paid. Details of the several days' business follow:—

On THURSDAY, Aug. 24, market quiet. Benhar opened at 9, and after being done at 8s. recovered to 9s., closing 9s. to 10s. New shares, 5s. to 6s. Cardiff and Swansea, 30s. buyers. Chapel House, 5s. 6s. buyers. Dalmeny Oil done at 8, closing 8s. to 8s. 6d. Glasgow Cardon, 29s. 6d. to 30s. Glyn, done at 5s. 6d. to 6s. 1s. 6d. Great Western Colliery, 9s. 6d. buyers. Monkland Iron and Coal (new), 2s. 6d. to 3s. 6d. Great Western Colliery, 9s. 6d. buyers. I. L. X. L. 15s. to 20s. Javali, 8s. 6d. to 10s. Langdale's Chemical, 5s. 6d. buyers. Newport Abercarn, 7s. 6d. to 8s. 6d. Omos and Cleland, 20s. 6d. to 22s. South Wales Smelting and Colliery, 5s. 6d. buyers. Sweetland Creek, 3s. 9d. to 4s. 3d. Tharsis done at 20, closing 19s. to 20s. Uphill Oil, 8s. 6d. buyers. Young's Paraffin opened at 14, and were afterwards done at 13s. and 13s. closing at these prices. On SATURDAY, Aug. 26, very little doing. Benhar done at 10s., closing 10s. to 10s.; new shares done at 7s. and 7. Chapel House, 6s. to 6s. 6d. Dalmeny Oil, 8s. 6d. to 8s. 6d. Exchequer, 4s. to 4s. Glasgow Cardon done at 30s. 6d. to 31s. 6d. Glyn, 5s. to 5s. 6d. Linares, 10s. 6d. to 11s. 6d. Javali, 8s. 6d. to 9s. 6d. Marbella, 5s. to 6s. 3d. Omos and Cleland, 27s. 6d. to 34s. 6d. Parys Mountain, 12s. 6d. to 13s. 6d. Penruthal, 1s. 6d. to 14s. Pestarena United, 5s. 6d. sellers. Rica, 1s. 6d. to 2s. 6d. South Wales Smelting and Colliery, 5s. 6d. sellers. Sweetland Creek, 3s. 9d. to 4s. 3d. Tharsis done at 20, closing 19s. to 20s. Uphill Oil, 8s. 6d. buyers. Young's Paraffin done at 8s. 6d. to 9s. 6d. Workington Malleable Iron, 15 to 16. On MONDAY, Aug. 28 (being contango day), as usual little doing. Benhar done at 10, closing about 9s. to 10s.; new shares, 6s. to 7. Bolckow, Vaughan, A done at 47. Chapel House, 6s. to 6s. 6d. Dunsley Wheal Phoenix done at 4s., closing 3s. 6d. to 4s. 3d. Killifret, 13s. 6d. to 14s. 6d. Linares Lead done at 19. 1s. 6d. and 20s. 6d. closing 19s. to 20s.; new shares done at 13s. 6d. Thornhill Reef (preference), 15s. 6d. sellers. Uphill Oil done at 8, closing 8s. to 8s. 6d. West Tankerville (preference), 40s. 6d. to 45s. Young's Paraffin done at 13s. 6d. and 13s. 6d. closing 13s. to 13s. Scottish Wagon done at 10s. 6d. to 11s. 6d. In shares of foreign oil concerns, Cape have fallen 40s., Russia 10s., and Panucillo 5s., but Tharsis have advanced 5s. ditto (new), 3s. 9d. Yorke Peninsula have been quite neglected, notwithstanding the receipt of another favourable report from the mines, not to mention the evidences of progress at the company's Aberdeen township. English and Australian Copper are at 27s. 6d. to 32s. 6d., and New Querida 7s. to 8s. Linares Lead have been good, now 8s. buyers. Home mines, a dead letter. Dunsley Wheal Phoenix are 1s. 3d. lower on 9s.; Glasgow Cardon 1s. lower on old, and 9d. on new shares, but each are now ex div. Pestarena United (Gold), 5s. 6d. sellers. Marbella, 5s. to 6s. 3d. Omos and Cleland, 20s. 6d. to 22s. 6d. Sweetland Creek, 4s. to 4s. 3d. Tharsis done at 20, closing 19s. to 20s.; new shares done at 14, closing 14s. to 14s. Thornhill Reef (pref.), 10s. 6d. sellers. Uphill Oil, 9s. to 9s. 6d. West Tankerville (pref.), 42s. 6d. buyers. Young's Paraffin done from 14 to 14s., closing 14s. to 14s. The following were the rates of continuation current to-day:—Contango—1d. on Canadian Copper Pyrites; 1d. on Emma; 3d. on Flagstaff; 1d. on Glasgow Cardon; 1d. on Glasgow Port Washington; 1d. on Huntingdon; 4s. 6d. on Richmond; 10s. 6d. to 10s. 10d. on Young's Paraffin. Even—Marbella, Monkland. Backwardations—6d. 9d. 1s. on Tharsis (10s. paid); 1d. on Omos and Cleland. On comparing the making up prices for the following shares fixed to-day, with those on the last occasion, the variations shown are—Young's Paraffin, 2s. 6d.; Richmond, 10s.; and Glasgow Cardon, 1s. 6d.—all higher per share; while Marbella, 7s. 6d.; Tharsis, 10s. 6d.; Omos and Cleland, 1s. 6d.; Tharsis (7s. paid), 1s. 3d.; and Monkland, 1s.—each lower. Canadian Copper Pyrites ditto (new), Emma, Glasgow Port Washington, Huntington, and Monkland (preference), are unaltered. The fixed price for Benhar (10s. paid) is 10s.

On TUESDAY, Aug. 29, the new account opened for settlement Sept. 14; Monday, Sept. 11, will be contango day—market quiet. Benhar, 9s. to 9s.; new shares done at 8s. 6d. 9s. 6d. Chapel House, 6s. to 6s. 6d. Dalmeny Oil, 8s. to 9. Glasgow Cardon, 29s. 6d. to 30s. Glyn done at 5s. 6d. 6s. 6d. Monkland done at 47s. Nant-y-Glo and Blaina (preferred) 21. sellers. Omos and Cleland, 28s. 6d. to 30s. Pelsall Coal and Iron, 7 to 8. Richmond, 9s. to 10. Rio Tinto, 9s. 6d. sellers. Sweetland Creek done at 4s. Richmond done at 20, closing 19s. to 20s. Uphill Oil done at 9s. closing 9s. to 9s. Young's Paraffin opened at 14s. and 14s., but declined to 14s. and 14s., closing at these prices.

On WEDNESDAY, Aug. 30, very little doing. Benhar, 9s. to 9s. Bolckow, Vaughan, A, done at 47 and 46, closing 45 to 47. Dalmeny Oil, 8s. to 9. Ebbw Vale, 10s. to 10s. Glasgow Cardon done at 29s. 6d. to 29s. 6d. Linares, 17s. to 19s. John Bagshaw and Sons, 9s. 6d. sellers. Marbella, 6s. to 7s. 6d. Javali, 9s. to 10s. Pelsall Coal and

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Original Correspondence.

NEW QUEBRADA COMPANY.

SIR.—"Long expected come at last." It is many years that I and other original shareholders of this company have been looking for a cargo of copper from the far-famed mines of Aron legitimately obtained, and it appears that our exemplary patience is at length to be rewarded. I was very glad to read in the daily papers yesterday that the cargo which was known to be on the way had actually arrived at Swansea, and I see that it has already caused an upward movement in the price of the shares, which, in my opinion, have been for some time far below their real value, and have been kept down by an amount of jobbing and speculation, which few companies have had to endure.

The arrival of this cargo will, at all events, settle one point about which I should have thought there could have been no question, as great efforts have been made at different times to frighten the more timid among the shareholders into selling, by the statement that there was no ore there, or if there was that it was of comparatively little value. We must wait now for a few days to hear from the company what is the result of this first shipment. I hear also, incidentally, that some mahogany and fustic, for both of which our property is said to be famous, have formed part of the same cargo.

Sept. 8.

AN ORIGINAL SHAREHOLDER.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR.—"Investor," in last week's Journal, asks questions and pounds assertions that clearly demonstrate his imperfect acquaintance with the subject on which he writes. He argues that if the Richmond was as rich as reported it would have been easy to raise and sell 2000 or 3000 tons of ore instead of raising debentures. The wariest tyro in mining knows that the proved existence of a large body of mineral by no means implies the practicability of obtaining it immediately. The debentures were issued in order to make the company at once independent of advances by its agents. The large profits now being realised would, no doubt, have speedily produced the same result, but it can make no difference to the shareholders whether the surplus earned over the sums distributed as dividends is kept in reserve to meet the debentures as they fall due, or applied directly in extinguishing them, so long as the interest received on such surplus is equal to that carried by the debentures.

"Investor" favours us with his dictum that "lead without silver or gold in sufficient quantity had better be left in the bowels of the earth." He is thus hopelessly ignorant of the fact so repeatedly announced in your columns that it was a deficiency in lead, and not in silver or gold, which for some months adversely affected the returns. Capt. Rickard in his report, as published in the Journal of Aug. 26, names the small sum paid for outside ore, being about 1000*l.*, out of a return of 14,000*l.* "Investor" coolly ignores this statement, and repeats his charge that no information has been given as to the proportion of purchased ore to Richmond ore.

As we understand this question of purchasing outside ore, the necessity of obtaining it only arises when the Richmond ore is deficient in lead; and, as latterly the mine is yielding the proportions of each metal essential to good smelting, but little outside ore is bought. It is true that an imputation of motive is no argument, but it is not true that to unmask the designs of conspirators against a property of proved value is synonymous with bolstering up worthless concerns. When intended "bear" operations are preceded by suggested falsehoods and suppressed truths, and some shady accountant is hired to concoct specious falsifications of honest accounts, the demonstration of the "motive" is a legitimate defence.

Sept. 6.

AN ORIGINAL SHAREHOLDER.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR.—A pamphlet, with a preface by Mr. G. M'Henry, who it appears employed a Mr. Legthorne to get up a case against the Richmond accounts, was lent to me to-day, and wishing to obtain a copy I went to the address given, but was told that nothing had been heard of the parties for four months. The object of the writers of the precious production is so transparent that it scarcely needs the exposure it will doubtless shortly receive. A clique to run up the Eberhardt and run down the Richmond has evidently set the presumed writers their task, and dictated the lines of attack. It would be wise on the part of my co-shareholders to enquire into the antecedents of both the gentlemen who have put their names to the artful collection of half truths, obviously intended to further an unscrupulous Stock Exchange operation. S. POSTLETHWAITE.

London, Sept. 8.

[For remainder of Original Correspondence see this day's Supplement.]

Meetings of Public Companies.

PRINCE OF WALES MINING COMPANY.

A special meeting of the shareholders was held yesterday at the offices, St. Michael's Alley, Cornhill.

Mr. J. Y. WATSON, F.G.S., in the chair.

The notice calling the meeting was read by Mr. C. B. PARRY, the secretary. The following report of the agent was also read:—

Sept. 7.—Since your last general meeting operations have been chiefly confined to driving the 77, 55, and 45 fm. levels. At the 35 we have since the last meeting intersected the lode west of cross-course, and have driven 9 fms. on its course; when intersected near the cross-course it was worth 15*l.* per fathom, but it soon increased to 25*l.* per fathom, but from that point to within 6 ft. of the present end it varied from the latter value to 12*l.* per fathom. In the present end the lode is not so good, being now 2½ ft. wide, worth 8*l.* per fathom; the last taking down of the 77 was about the best we have had west of the cross-course—a piece of lode 10 ft. long y. 17 tons of ore, 4½ tons of which gave a produce of 10*l.* per cwt., and 2½ tons gave a produce of 5 per cent., showing the lode to be worth over 20*l.* per fathom, although at that time the lode was only valued at 15*l.* per fathom, but then we had not the result of the assay. The present falling off in value we regard as temporary, but firmly believe it will improve again before we drive 2 fms. further. At the 77 we have driven a cross-cut 11 fms. north; this cross-cut has been taken on the same cross-course we are now driving west at the 55, and a few feet below the end was passed through a lode 2 ft. wide spotted with copper ore, but in consequence of the improvement at the 55 have not opened on it, as we brought the same back for to try and find the lode west of cross-course, which up to the present time we are sorry to say we have not succeeded in doing, but are very anxious the lode must be near, as a large stream of water strongly charged with copper is coming from the end; this water is coming from the west of the cross-course, and as a cross-cut had been driven north and not from the lode, we thought straight north-west (although the 55 is now north); we accordingly drove 8 ft. south, but finding no lode we put the men to drive west in the direction the water was coming from, but up to the present no lode has been met with. Yesterday we put the men to drive north-west of the western limb of the cross-course (here the cross-course is split into three parts, and the cross-course is driven north on the eastern part), where we hope to shortly intersect the lode, but should we be unable to find it in this direction the best course we could advise is to sink a winze on the bottom of the 55 on the course of the lode, which would prove the lode as it goes down, and would after communicating with the 77 give good ventilation and enable the one ground now standing in back and bottom of the 55 to be taken away at a good profit. A winze could be at once commenced upon a lode worth 20*l.* per fm. The lode at the 45 west has varied in width from 3 to 5 ft., and from stone from 1*l.* to 12*l.* per fathom, but at the present time it is of no value, although there is every indication that the lode will shortly improve; this end is now about 40 fms. behind the 55 west. In conclusion, we beg to say that seeing the lode at the 55 west opening out so well, and in entirely new and unexplored ground, having a length of upwards of 500 fms. still further west on the course of the lodes, that if vigorously prosecuted it cannot, in our opinion, hardly fail in proving a success. J. ANDREWS, J. PAYOR.

The CHAIRMAN said: Gentlemen, this meeting has been called owing to the bankruptcy of the largest shareholder, and it is necessary to decide on future operations, and provide funds for the liability. The total amount of liability is about 1700*l.*, against which there are arrears of calls 615*l.*, but of this 428*l.* is due on the shares held by Mr. Phillips. If the mine is to be carried on a call of 4*s. 6d.* will be necessary to clear off the debts; if wound-up the machinery may be estimated at 1000*l.*, and a call of 2*s. 6d.* per share will have to be made to clear off some of the present liabilities. The other course open is to forfeit all the shares in arrear, and those shares, together with those already standing to the credit of the company, would make 4300 shares which could be offered for sale, and if taken at a fair price the company could go on and prove new ground with a moderate call. We cannot make a call to-day, but my

recommendation is that a general meeting should be called at an early date to decide upon one or other of those courses.

In reply to shareholder, it was stated that the mine could now be carried on at a monthly loss of 100*l.*

SHAREHOLDER considered that they should most decidedly go on, because it would be most prejudicial to the company to desist now. He suggested a call should be made sufficient to pay off the liabilities and continue the working of the mine.

A resolution was then passed that a general meeting be held on the 29th inst., to make a call and to decide upon future operations. It was also decided that a copy of the Chairman's statement, given above, should be sent to each shareholder. It was also understood that the shares held by the bankrupt shareholder would be, at the forthcoming meeting, forfeited, and absolutely forfeited at the confirmatory meeting.—The proceedings then terminated.

GLYN.—The ordinary general meeting of shareholders was held at the mine on Tuesday (Mr. Matthew Greene in the chair). The report of the manager and accounts were received and adopted. Messrs. Matthew Greene, Adam Murray, F.G.S., T. Marten, William Thomas (Mayor of Llanilloes), and Thomas Jones were elected directors. The 658 unallotted shares were subscribed for and taken at 3*s. per share* by the members present. The auditors were re-elected, and a cordial vote of thanks was given to the Chairman and directors for their past services and the efficient manner in which the business of the company had been conducted. Full particulars will appear in next week's Journal.

[For remainder of Meetings see to-day's Supplement.]

THE STORAGE OF EXPLOSIVES.—Major Majendie's report on an explosion of dynamite which occurred at Cymmer, near Maesteg, Glamorganshire, on April 21, by which 13 persons lost their lives and two others were injured, has been issued. It is explained that its publication has been postponed, pending proceedings against the Diamond Rock Boring Company for the offences indicated therein. Those proceedings have now been taken, a conviction obtained, and penalties have been imposed. Major Majendie says:—"The conclusion appears inevitable that serious blame attaches to the company and their servants for the dangerous negligence which is shown to have prevailed at these works in regard to the keeping and handling of explosives. To apportion the blame in regard to this negligence is not easy. Primarily, I suppose, the company must be held responsible for the acts or omissions of their servants, and I do not think this responsibility can be considered to be discharged by the fact that, in practice, the working management was vested in Mr. Lean. It was surely the duty of the company, as is of everybody carrying on operations which involve risk of accident, to satisfy themselves that adequate precautions have been adopted for the prevention of accidents. Had the company made any enquiry of this sort, I cannot doubt that they must have seen reason, as they can hardly fail to see reason now, for dissatisfaction with the arrangements. The professional qualifications of the Chairman (Major Beaumont, R.E.), and his experience in connection with explosives, would at once have suggested to him that the arrangements adopted were not such as to afford any reasonable security against a serious accident. The actual working arrangements were, however, in the hands of Mr. Lean, the resident engineer, and it does appear to me that this gentleman is seriously to blame for the state of things which prevailed. It was, in my opinion, his duty to have taken steps to secure the strict observance of the conditions of the licence and the adoption of proper measures of precaution; but Mr. Lean appears to have tacitly delegated his functions to the storekeeper and the foremen, and this without taking any steps to direct their special attention to the particular points affecting their respective duties. Butland was left to find out for himself how much dynamite he should issue, and this, as we have seen, he wholly failed to discover; and the foremen were left to take such precautions as seemed to them proper, and these, it has been shown, were culpably inadequate; so, in the end, we find an excessive quantity of dynamite being issued and the keys of the man-hole in which it was kept was entrusted to a man (Parsons), whom the foreman, Elliott, knew to be reckless, and in the habit of disobeying such elementary orders as had been issued with a view to the prevention of accident. There was thus, as it appears to me, a general failure of duty and censurable negligence on the part of all concerned, beginning with the company, continuing with Mr. Lean, Butland (the store-keeper), and Elliott, and ending with Parsons, and to the failure of duty and negligence of this last-named man in the carelessness and improper making up of the charges at the man-hole, the explosion, as I have shown, may be immediately ascribed, while the large resulting loss of life was no doubt due to the direct violation of a condition of the licence and the illegal presence of a quantity of dynamite largely in excess of what was required for 'immediate use.'

ECHOES FROM THE MINING MARKET.

Business during the past week has been on a very restricted scale, and prices generally have scarcely altered. In foreign shares, however, there has been a severe fall in Richmond owing to certain unfavourable rumours which, as they are utterly unauthenticated, it is not necessary to publish. For Chontales, Javali, and Pestarena, there has been a steady enquiry, although prices still rule very low.

In lead shares the only change to notice is a demand for East Van, at 10*l.* to 11*l.* per share. In colliery shares there has been a slight enquiry for Newport Abercarn, in consequence of the late discoveries, and the shares are called 4 to 5. Chapel House have been offered in considerable numbers, and the price closes about 3*s.*, with a weak market. In our remarks last week we intended to state that the mortgage had postponed the payment of further instalments on account of the mortgage until November next year, instead of November next, as written. A small business has been transacted in Thorp's Gawber and Altami, but prices remain unchanged. In copper shares Penrhyn have been in better demand at 12*s. 6d.* to 13*s.*; a good course of ore is expected to be met with very soon.

The tin market has been extremely quiet, and there is not a feature to notice in tin shares. We hear of a small improvement in the bottom of Cook's Kitchen.

JAMES H. CROFTS.

MOUNT'S BAY MINE (Breage, Cornwall).—In referring to the Mount's Bay Mine (Capt. J. Curtis, manager) it may not be amiss to repeat that it is in judiciously selected home ventures to which the capitalist should look for those enormous returns on outlay which have been hitherto realised in such a degree by our own Western Peninsula, such results having again and again repeated themselves from the time of the first trading of the Phoenicians, and if we are to see a return of those palmy days when the hard working, clear headed, far-seeing practical miner burrowed into the bowels of the earth, and emerged with that return to which many of our present magistrates owe their wealth, position, and influence we must shun the illusion that because a mine is situated in a foreign country it is necessarily rich; and another illusion that because mining at home has been tried, worked out, and abandoned, they can resume their pristine state at the call of company promoters, who by showing what has been done at the same time simply prove the utter exhaustion of a property; if consideration were given to these points it is at once seen that to obtain a satisfactory result, not paid out of capital, Nature must again fill up with mineral those depths and lengths which have already been realised and appropriated by former owners. This Nature is not kind enough to do, hence discredit to mining, loss to investors, and disgrace to intermediaries, with uncalculated reflection to all parties concerned. Mining is not, as is too often thought, a hazard happy-go-lucky game. On the contrary, where geological and physical formations and conditions are well understood, its requirements and results may be reduced to almost an equal certainty as those arrived at by an actuary of competence in respect to a life or other assurance calculation. Although possessed of incalculable mineral riches, and within a day's run of London, to all practical purposes the Mount's Bay might have been situated in the most remote and unexplored regions until within the past few months, when it is now demonstrated that—firstly, the surface is being dressed and sent to market at 16*s.* in 1*t.* or 20*l.* per cent. profit free of cost.—Secondly, the dead ground driven there is all valuable china-stone, worth at a moderate computation 60,000*l.* and upwards, and thirdly, we would re-purchase the substance of the article in the *Mining Journal* of Aug. 12, p. 872. To say the least these facts are encouraging, and it may only be fair to add that no promotion money is paid, or under any circumstances is to be paid no preliminary expense or rents stand against the company, and all the expense of development of the various points of merit are borne by private individuals, an example which other companies may find it yet too late to follow. Therefore, if, and whenever the company choose to invite the public to subscribe for their shares or their bonds the one presents the attraction of, perhaps, thousands per cent. return on the outlay, the other 6 per cent. payable half yearly, with repayment of capital and bonus added at the end of three years.

MAP OF TURKEY IN EUROPE.—So much interest is at present felt in the affairs of the East, and so little is really known by Englishmen either as to the geography or ethnology of the countries in and around which the Turco-Servian war is going on, that in publishing a new and revised edition of his map of Turkey in Europe Mr. Wyld has performed a very useful service. The map is admirably engraved, and carefully coloured to distinguish the differences of race and religion, and will doubtless be generally appreciated.

EARLY LONDON INDUSTRIES.—A highly interesting little volume from the pen of Mr. W. GLENNY CROFTS, the author of "Industry in Ireland," and other books of the same class, has just been issued under this title by Messrs. Longmans, of Paternoster-row. The field which Mr. Croft has explored is one about which so little is known that the reader is fairly taken by surprise at the immense amount of material he has had to deal with—jute manufacturing, iron ship building, paper staining, gas tar works, gas making, the manufacture of matches, brewing and distilling, the manufacture of tallow and soap, the building trade, the manufacture of the paper trade, the silk trade, crinoline and corset making, gun making, floor cloth making, importation of beasts, birds, and shells, india rubber manufacture, sail and block making and ship chandlery, rope making, and various other industries have had to be described, and the amusements of the people have been formed into quite an interesting chapter, not the least peculiar record in the volume being the fact that the establishment of a college is actually proposed for the district. From the popular manner in which Mr. Croft has handled the subject it may safely be said that it would be extremely difficult to find a more entertaining work connected with the history of

the metropolis. It is one of which the denizens of the East may well be proud, whilst those of the West will learn that if their fellow-subjects in the locality treated of are less known in the world of fashion, their importance in the world of industry is quite as great. The volume is one which cannot be too widely circulated.

ADVANCE IN THE PRICE OF HEMATITES.—A reaction has at length set in, after so long a continuance of low prices. On Wednesday last the Wolverhampton market displayed a sensitiveness which has not been apparent for a long time. It is well known that heavy sales have lately been effected, and that hereafter hematites will be in greater demand. The Barrow Hematite Company took the lead, and advanced 2*s. 6d.* per ton. The others followed, and the orders of the day were booked at the advance. As is usual in such cases, the market was unsettled, and strong efforts were made to enter into contracts for forward delivery at old rates, but without success. There is a greater disposition to increase the advance than to sell at the old prices; and certainly, in the face of present circumstances and the prospects of the future, it is idle to think that the hematite market can long remain without a considerable advance in price. Cumberland and Cornwall will soon have enough to do to supply the demands which will be made upon them.

PREVENTING INCRUSTATION IN STEAM-BOILERS.—The new composition for preventing incrustation invented by Messrs. MURDOCH and Co., of Wapping, consists of equal parts of sand and sawdust, combined with ground glass, mica, and a small proportion of horse manure. These materials are well mixed together, and are convenience made up into cartridges or packets, about 9 in. long and 1*l.* in. diameter, ready for being introduced into boilers, tubes, tanks, or other hot water apparatus, coated with sand or liable to become incrusted with impurities. This composition does not act chemically, but exerts a mechanical action, uniformly and effectually, by circulating throughout the interior of the boiler tubes, pipes, and other hot water apparatus, whether stationary, locomotive, marine, or otherwise, thereby removing or preventing the formation of the hot water. By this means a great saving is effected in wear and tear caused by the removal of scale and deposits by chipping or otherwise. Labour and expense are also saved by rendering it unnecessary to take out the tubes of locomotive and other boilers for cleaning, leakage from this cause being also prevented. Thus by preventing the boiler plates and tubes from becoming foul a great saving in fuel is effected.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

MOLD MOUNTAIN QUARRY COMPANY (Limited).—Capital 25,000*l.*, in 10*l.* shares. To acquire and work quarries and mines of limestone, lead, ore, black jack, calamine, and other ores, and to take over the quarries and works of Mr. B. G. D. Cook, situate at Mold. The subscribers are—J. A. Keates, 25, King-street, Liverpool, merchant; J. D. Llwyn, Offa, Mold, 25; E. Thompson, Mold, cobbler, 25: Thomas Jones, North and South Wales Bank, Liverpool, bank clerk; Thomas Rigby, Oakfield, Roby, Liverpool, iron merchant, 25; B. G. Davies Cooke, Colomendy, Mold, Lieut.-Colonel, 50; G. Bellis, civil engineer, High-street, Mold, 5; John Corbett, Mold, iron merchant.

CAMBRIAN LAND COMPANY (Limited).—Capital 10,000*l.*, in 5*l.* shares. To acquire freehold property in England or Wales. The subscribers (who take one share each) are—W. Green, Barcroft, Dunderum House, near Armagh; J. M. Owen, Upper Huskisson-street, Liverpool; W. B. Wyatt, 52, South Castle street, Liverpool; H. Williams, 71, Grove-street, Liverpool; Thomas Dunnott, Liverpool; T. S. Little, Liverpool; and W. A. Chapman, 113, Vine-street, Liverpool.

WILLENHALL FURNACES (Limited).—Capital 50,000*l.*, in 25*l.* shares. To carry on business as ironmasters, proprietors of blast-furnaces and manufacturers of and dealers in iron, colliery proprietors, brick makers, &c., and to acquire blast-furnaces and collieries at Willenhall, Staffordshire, the property of Messrs. Fletcher, Solby, and Urwick, according to an agreement made between N. N. Solby and B. Urwick of the first part, J. D. Fletcher of the second, and H. Parrish of the third. The subscribers are—N. N. Solby, 30, George-road, Edgbaston, ironmaster, 5; J. Hill, Ashmore Lodge, Wednesfield, coalmaster, 5; J. Solby, Tipton, Staffordshire, ironmaster, 5; J. D. Fletcher, Gravelly Hill, Warwickshire, iron merchant, 5; L. H. Solby, Brinsford road, 5; J. H. Stubbs, 21, Waterloo street, Birmingham, solicitor; F. Sanders, 23, Colmore-row, Birmingham, solicitor, 5. The directors are—Messrs. N. N. Solby, B. Urwick, H. H. Fletcher, and James Solby. The managing directors are Messrs. N. N. Solby and B. Urwick, the salary of the former being 40*l.* per annum, and that of the latter 30*l.*. The qualification for a director is the holding of 15 shares. The price paid for the property is 44,500*l.*, 88*l.* of which is payable in cash.

RIOGA GRANDE COLLIERY (Limited).—Capital 10,000*l.*, in 10*l.* shares. To purchase the collieries, mines, and works near São Jerônimo, Province of Rio Grande, Brazil, belonging to the Imperial Brazilian Collieries (Limited). The subscribers (who take one share each) are—John Bennett, 7, East India Avenue, shipowner; R. L. Bocking, 26, Nicholas-lane, merchant; Richard Henken, 17, Cullum-street, merchant; E. L. Miry, 71, Queen Victoria street, merchant; Louis Carl Beckman, 1, East India Avenue, merchant; Essex White Taylor, 4, Lutbury, secretary; P. Michaelis, 23, Nicholas-lane, merchant. The qualification for a director is the holding of shares to the value of 15*l.*. The directors are not yet appointed.

SOMERSET LIME AND CEMENT COMPANY (Limited).—Capital 10,000*l.*, in 100*l.* shares. To carry on mining, quarrying, and excavating operations, and to deal in limestone, cement, &c. The subscribers are—F. Ogle Moore, 23, Redcliffe-square, gentleman, 10; J. F. Brooke, Ashbrook, Fermanagh, lieutenant R.N.; H. O. Robinson, C.E., 31, Bishopton-street; J. H. E. Waters, 31, St. Stephen's road, Bayswater, mining engineer, 5; E. Fullwood, 19, Buckingham-street, Strand, cement manufacturer; B. Roe, 168, Oakley-street, Cheltenham, 5; L. W. Pass, 86, Queen-street, Cheapside, solicitor. This company is registered without Articles.

BIRMINGHAM AND DISTRICT BREWERY COMPANY (Limited).—Capital 25,000*l.*, in 5*l.* shares. To take over the business of the Birmingham Brewery Company. The subscribers are—James Neale, 68, Graham street, Birmingham, 1; J. Gilbert, Birmingham; James Parker, 50, Grant-street, Birmingham, 10; Thomas Trix, Oak Cottage, Harborne, gentleman; G. F. James, 37, Temple-street, Birmingham, 1; J. B. Nock,

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. Toy, Sept. 6: Setting Report: The new shaft to sink below the surface, by nine men, at 17s. 10s. per fathom, for the month; this shaft is now down 18 fms. 2 ft. In the deep adit level to drive a cross cut south towards the new shaft, at 6s. 15s. per fathom, for the month. In the east part of the sett (Crowlwm) the cross cut to drive towards the south lode, by four men and one boy, at 8s. per fathom, for the month; the ground here is much harder for driving than it was last setting-day.

BEDFORD UNITED.—R. Goldsworthy, Wm. Phillips, Sept. 7: At the 127 in setting ground for tramroad a part of the north lode has been taken down, and so far as seen it is producing good stones of ore. All other points in the mine are about alteration since last report. Saturday next being setting-day a full report will be sent next week.

BROMFLOYD.—Thomas Kemp, Sept. 7: Setting Report: No. 3 Shaft—North Lode: The 110 end west is extended under the point of winze from the 95, and the men will at once commence to rise up towards the same; the lode here at times is showing nice patches of lead ore, and is letting out a large feed of water, which has drained the winze. The winze under the 95, west of shaft, is down 9 fathoms, thus leaving about 2 fms. more to complete the same to the 110; the part of the lode carried in sinking has again improved, and is worth 15 cwt. of ore per fathom; this bargain is worked by six men under contract, as stated in previous reports. Eight men to stop the lode over the 95, to the west of Joshua's winze, at 6s. per fathom; the lode is not looking quite so well now, worth 14 cwt. of ore per fathom. Twelve men to stop the lode to the east of Joshua's winze, over this same level, at 8s. per cubic fathom: the lode is of about the same value as when last reported, worth 15 cwt. of ore per cubic fathom. A tribute pitch to two men, over the back of the 73, east of shaft, for two months, at 11s.; the lode is worth about 10 cwt. of ore per fathom. The tribute pitch in the 40 west has very much improved, and the men are getting good wages in their tribute, at 15s. per ton; their contract will not terminate before the end of the present month. —No. 2 Shaft: Middle Lode: Two men to drive the 52 end west of Lloyd's cross cut, at 16s. per fathom, which includes the removal of stuff; the lode is much the same as for some time past, carrying a nice branch of ore, worth 8 to 10 cwt. per fathom; from the kindly appearance of the lode we ought to have an improvement here. The lode in the stopes over the 40, to the east of shaft, is worth from 12 to 14 cwt. of ore per cubic fathom, and the ore appears to extend back west towards the shaft, on the north side, so I thought it advisable to open a level in that direction, which is set to four men, at 16s. per fathom. We have a full supply of water for all purposes. Hauling and dressing going on with all speed. Machinery in pretty good order.

CWM NANT DDU.—The manager writes: We are pushing on the driving now on the course of the lode as fast as possible in a lode superior in size and quality to anything I have seen in the level above, except in the run of ore ground driven through in the upper level, which cannot be far ahead of us now. Indeed, I fully expect to find in the lode a greater quantity of lead at this depth than it yielded in the level above. We shall have upwards of 40 fathoms of backs from the base of No. 21 level to surface. I shall write next week or sooner if any change takes place in the lode.

CWMYSTWITH.—Sept. 6: The lode in Michell's level west is still small and poor, but the ground is more favourable for driving than we have seen it for the last six months. In the 12 east, on the new lode, the lode is 2 ft. wide, worth 10 cwt. of lead ore per fathom. In the Rosa level west, on the new lode, the lode is 5 ft. wide, composed of clay-slate, gossan, and very nice stones of lead ore, good saving work for dressing. In the wide stopes at level Fawr, on the copper lode, the average value is 16 cwt. of lead ore per cubic fathom. Our tribute pitches are looking just as usual. We are pushing on with the dressing of tributaries' stuff and halvans as fast as we can. —New Work: The water-wheel is completed, and we are now busily engaged in getting on the gearing. The engineers are making some small alteration with the air-compressor, consequently the rock drills have not been set on in a regular way of working as yet.

DE BROKE.—J. Phillips, Sept. 6: The lode in the 35, west of Wilson's shaft, will produce 1 1/2 ton of lead ore per fathom. The level driving east has fallen off in produce, but the lode is very congenial, and likely to open out productive again. The winze below the 25 is still in a fine lode, worth 2 to 2 1/2 tons of lead ore per fathom, but progress rather slow in sinking. The stopes are without any adverse change. The mine, on the whole, looks very encouraging.

DENBIGHSHIRE CONSOLIDATED.—J. Pryor, Sept. 7: In the 112 east the lode is about 5 ft. wide, and there are two ribs of ore—one with the footwall side, and the other with the hanging side of the lode; the size of these are about 4 to 4 1/2 in. in width for the height of the level, and there is more spar coming in, so greater success may be expected. In the 112 west driving is now being continued, the lode being about 2 ft. wide, composed of spar and lead—saving work for the dressing-floors. No. 2 is improving, and we are preparing another parcel of ore for sampling.

DEVON GREAT CONSOLS.—James Richards, Sept. 8: Wheal Anna Maria: Engine-Shaft: In the 80 west, and west of Jeffry's cross-cut, on the new south lode, the lode is 2 ft. wide, consisting of quartz, capel, and mundic. In the new shaft sinking from surface, 50 fms., to the west of Jeffry's cross-cut, the lode is still 2 1/2 ft. wide, composed of gossan, light capel, and a little black oxide of copper, very promising.—Wheal Josiah: Richard's Engine-Shaft: In the 60 west, east of Castle's cross-cut, on the south part of the lode, the lode is worth 1 ton of ore, or 32. per fathom. In the 90 west, and west of Castle's cross-cut, on the south part of the lode, the lode is 3 1/2 ft. wide, and worth 2 tons of ore, or 6s. per fathom. —Wheal Emma: Thomas's Engine-Shaft: There is no alteration in either the 216 or the 145 east, since last report. In the new shaft, sinking below the 160, the north portion of the lode, now in the shaft, is 3 ft. wide, composed of arsenical mundic, capel, congenital quartz, and one worth for length of shaft (10 ft.), 6 tons, or 24. per fathom. This shaft will have reached the required depth in the course of next week to admit cutting of trip-plat, and driving at the 175, when no time will be lost in proving the value of the lode for its full width at this very promising and important point.—New Shaft, New South Lode: In the 160 east the lode has been taken down home to north wall, proving it to be fully 7 ft. wide; a fine course of ore, worth 15 tons, or 6s. per fathom. In the 145 east the lode is 4 ft. wide, and worth 7 tons of ore, or 32. per fathom. In Tregay's cross cut, south at the 130 east, the lode has been cut through, and proves to be 4 ft. wide; worth 8 tons of ore, or 32. per fathom. The drivage will now be turned east on the course thereof. In the 115 east the lode is 3 ft. wide, and worth 4 tons of ore, or 16. per fathom.

EAST CARADON.—J. Kellow, T. Trelease, Sept. 6: The shaftmen are making fair progress in sinking Williams's shaft below the 130. To sink the winze below the 130 on Child's 1 min. stent, by six miners and three labourers, at 7s. 10s. per fathom; the lode is 2 ft. wide, composed of quartz, peat, and mundic. To drive east on south part of Child's 1 min. stent, by two men, at 8s.; it was driven 5 ft. The lode is 1 ft. wide, chiefly composed of quartz, spotted with ore. To drive east on counter 1 fm., by four men, at 14s.; it measured 1 fm. 2 ft. 6 in. The lode is 2 1/2 ft. wide, composed of mundic, peat, and quartz, intermixed with spots of ore. To stop the counter in the back of the 90 fms. stent, by two men, at 3s. 10s.; it measured 2 fms. 3 ft. 7 in.; yielding 2 tons of ore per fathom. To stop Child's lode in the back, as per bargain of 8s. 10s., it measured 9 fms. 2 ft., and yielding 2 tons per fathom. To stop the counter in the back of the 80 fms. stent, by four men, at 2s. 10s., where the lode will produce 1 1/2 ton of ore per fathom. To stop the branch below the 70, 47 fms. stent, by two men, at 2s.; it measured 3 fms. 3 ft. 4 in., and yielding 1 ton of ore per fathom.—Midway Level: We have four men stopping the branch below this level in places where sufficiently productive; yielding 1 ton of good quality ore per fathom. Six tribute pitches were set, each by two men, for one or two months, at tributes varying in value from 6s. 8d. to 1s. 4d. in 17.

EAST VAN.—W. Williams, Sept. 7: Tempest shaft is down 48 fms. The 25, west of Tempest shaft, continues to look most promising. We feel assured from present appearances that we are skimming the top of a productive lode, as we have no very good lead for lead about half-way up the forebay.

GAWTON COPPER.—G. Rowe, G. Howe, jun., Sept. 2: There is no change in the character of the ground in the winze sinking below the 117 during the past week. The lode in the stopes in the back of the 117 is worth 8s. per fathom. The lode in the 105 east is 4 ft. wide, producing very strong arsenical mundic, with good stones of ore—altogether of a very kind appearance. The lode in the rise going up in the back of the 105 is worth 12s. per fathom. The lode in the stopes in the bottom of the 95 is worth 10s. per fathom. The lode in the 82 east is 5 ft. wide, being principally composed of spar and capel, with mundic and good stones of ore. The tribute department is without change.

GLASGOW CARADON CONSOLS.—Wm. Taylor, W. J. Taylor, Sept. 4: The 75 east, on south lode, is worth about 15s. per fathom, in favourable ground; very little change west on south branch, from 7s. to 8s. per fathom. The middle level east, on the south lode, is worth 18s. per fathom; we are obliged to suspend this end to rise in the back for ventilation. This rise is not looking so well, now worth 18s. per fathom for the length carried. The winze in the bottom of this level is worth 15s. per fathom, with more lode standing both north and south. The ground in the 65 east is improved, but no change in the lode; we are pushing on this end to get over the rise going up from the Midway; we want to communicate this as early as possible. No other change in the ends to notice. The stopes and pitches maintain about the same value as reported last week. All the work at the new shaft is in a forward state, and we are making preparations to sink below the 75, which we hope to commence in about a fortnight from this time. Our next sale of ore is computed 25 tons, which will be sold on Sept. 21.

GLENNROY.—R. Rowe, Sept. 6: On forking the water out of the 50, we found a great accumulation of stuff, which had to be cleared before we could make any trials, and we have only been able to commence cross-cutting to day. The water is now down to the roof of the 65, and if all goes well, the mine will be completely emptied by Monday next; after that we shall have full opportunity to test and prove the important points that have been reported in the levels above, as before quite undiscovered.

GORSedd AND MERLLYN CONSOLS.—Wm. Edwards, Sept. 7: The new pit sinking is proceeding satisfactorily. We are now anxiously looking forward to the pleasure of announcing its completion.

GOVEU (Silver-Lead).—W. Nicholls, Sept. 7: We have sunk the engine shaft 2 ft. 6 in. during the past week. It is now 6 fms. 5 ft. 6 in. below the 25 fm. level. I am pleased to say the lode has improved, and have broken some splendid stones of lead within the last few days. The lode is of a most masterly character, and seems in every way congenial for silver lead.

GREAT DYLIFFE.—Edward Rogers, Sept. 6: Dyliffe Lode: In the engine-shaft sinking below the 120, the lode is 2 ft. wide—a mixture of lead and copper, worth 18s. per fathom for length of shaft—10 ft. At the 120, east of this shaft, the lode is not quite so rich as it has been, worth at the present time about 8s. or 10s. per fathom. At the 40, driving east of boundary shaft, the lode is in a little improved, worth 15s. per fathom. In the other levels there is no alteration. We have a full supply of water, and hope the dressing will now go on regularly. A setting report shall be sent you next week.

GREAT LAXEY.—W. H. Rowe, Sept. 6: There is nothing important to report of the bottom levels in the deep mine. The 235 end, north of Welsh shaft, is not so good as last reported. No. 1 winze has also fallen off a little, the bearing ground evidently inclining northward. The 2 winze continues in a fine looking lode, worth 80s. per fathom. The 223 end is about the same value as last reported—25s. per fathom. The 209 end driving back south, parallel with the original driving, is worth 6s. per fathom. The stopes over this level, further south, are worth about the same. No. 1 winze, sinking from the 190, is worth 6s. per fathom. No. 2, to hole to the 200 from Dumbell's, 50s. per fathom. Dumbell's: A month hence we shall be deep enough for a new level—15 fms. below the 200. Both ends in this level, north and south, are in good ore ground, worth in the former 48s. per fms., and in the latter 40s. per fathom. In the stopes about this point of the mine up-

ward there has been a falling off in the past month, but in the present month we hope to more than regain our former position. The 170 end north has entered an improved lode, worth 12s. per fathom. The new rise to communicate Dumbell's shaft direct to surface has cut into a rich lode, worth 90s. per fathom.

GREAT RETALLACK.—John Harris, Sept. 2: In the 20 west the ground has improved for driving, a floor of white killas coming into the bottom of the end, and I am hoping when this touches the lode we shall meet with an improvement. There has been no lode taken down for the week, consequently there is no change in its character to report. The pitches throughout the mine are producing fair quantities of blonde.

KINGSTON CONSOLS.—G. F. Richards, Sept. 7: The sinking of the engine-shaft continues in fair and regular progress below the 30, on the south wall of the lode, and this south part of the lode is still highly promising. In the 30, driving west, good progress has been made, and the lode maintains its large size and masterly character, containing capel, quartz, sulphur mundic, and saving work of silver lead and blonde ores. In No. 3 winze and stope in the bottom of the 18, west of engine-shaft, the lode is quite healthy, and produces 5 cwt. of silver-lead and 8 cwt. of blonde ores per fathom. Not quite so good progress has been made in Griffin's rise, in the back of the 18, and in consequence of increase of water in the winze in the adit level above, rendering the sinking more troublesome; these two points are not yet held, but we hope to do so very shortly now. In No. 1 stope, in the back of the 18, the lode yields 4 cwt. of lead and 5 cwt. of blonde ores per fathom. In No. 2 stope, in the back of the same level, the lode produces from 5 to 6 cwt. of lead and about 8 cwt. blonde ores per fathom. In the stopes in the bottom of the adit level the lode produces from 6 to 7 cwt. of lead and about 10 cwt. of blonde ores per fathom. We have sampled this week 10 tons (computed) of silver-lead ore, and 35 tons (computed) of good quality blonde.

LADYWELL.—A. Waters, Sept. 7: No change in the old mine. No. 2 pit on the mountain is down 9 fms. lode still yielding good ore-stuff. No. 3 pit is down 3 fms., lode 5 ft. wide, well charged with carbonate and sulphide of lead; in fact the lode improves daily. No doubt about our having a big deposit of lead at and about the said No. 3 pit.

LANRWST.—Robert Knapp, Sept. 6: Our miners continue to improve. The lode in the adit, east of Prospect shaft, is 3 ft. wide, producing 2 tons of lead ore per fathom. In the winze-sinking under this level, it is 3 1/2 ft. wide, producing 3 cwt. per fathom. The lode in the winze is 4 ft. wide, producing 35 cwt. of lead per fathom. These are all pioneer points in virgin ground, which is opening up splendidly. We continue to prove the diagonal shaft on account of the water. The lode in the shaft is quite 5 ft. wide, and fine ore is showing at each end, but of what value I cannot speak until we reach the bottom. We shall have the pit-work fixed in this shaft by the time the engine is ready to be set at work. We shall then be able to open up the mine rapidly in depth, in which direction I am most anxious to see it explored from the confidence I entertain of its increasing value in depth. The miners are getting on well with the engine-house. All other work is fairly in progress toward a much desired consummation.

LOVELL (THE).—Joseph Prisk, Edward Kempton, Sept. 7: Good progress is being made in driving the 30 east, on south lode, the lode is 8 ft. wide, 25s. per fathom. No. 1 stope west, which is now nearly as far west as the old engine-shaft, is suspended for the present, the quality of the lode is clear and is good.

LYNNLIMMON.—John Garland, Sept. 6: I beg to inform you that the engine has been made, and the machinery is now in full work.

PENNANT.—Sept. 7: In the stopes below the 40 yards level, east of engine-shaft, the lode is improving, and producing some good lead and carbonates. We have placed men to work upon another piece of lead and carbonates of the 40, where they are raising some nice lead ore. We are obliged to stop the stopes under the 60 until the mine is cleared of stuff by the drawing machinery, which is now in full work. In the 60 yard level driving the lode is in splendid condition, and is yielding 2 tons per fathom. The winze-sinking in the 60 yard level is 2 ft. wide, composed of quartz and carbonate of lime, and is improving for lead ore. The lode in the rise over this level is 18 in. wide, and is yielding 2 tons per fathom, and is very promising for an improvement. The south cross-cut, with all possible speed, and I trust before long to be able to report a good day's work.

PENNYERLEY.—W. T. Harris, J. Delbridge, Sept. 6: The machinery is now in full work, and the lode is about 3 ft. wide, composed of quartz and carbonate of lime, and is improving for lead ore.

PENNANT.—Sept. 7: In the stopes below the 40 yards level, east of engine-shaft, the lode is improving, and producing some good lead and carbonates. We have placed men to work upon another piece of lead and carbonates of the 40, where they are raising some nice lead ore. We are obliged to stop the stopes under the 60 until the mine is cleared of stuff by the drawing machinery, which is now in full work. In the 60 yard level driving the lode is in splendid condition, and is yielding 2 tons per fathom. The winze-sinking in the 60 yard level is 2 ft. wide, composed of quartz and carbonate of lime, and is improving for lead ore.

PENNYERLEY.—W. T. Harris, J. Delbridge, Sept. 6: The machinery is now in full work, and the lode is about 3 ft. wide, composed of quartz and carbonate of lime, and is improving for lead ore.

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low-pressure cylinders in such manner that the pistons are balanced, and he employs pulleys which reduce greatly the amount of friction, and at the same time he is enabled to have an equal pressure of the piston all round on the cylinder. And he constructs the low pressure cylinders with a double case in such a manner that a space is formed between, and into which steam is admitted from the boiler or other source, so that no condensation of the steam contained in the cylinders will take place. Steam, after leaving the low-pressure cylinders is conveyed to the condenser. By this arrangement of low-pressure cylinders and pistons actuated by the cam movement that he is enabled to obtain more than double the amount of power over ordinary compound engines with the same amount of steam.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: Thunderer Explosion (F. S. Thomas); The Nascent Copper Process (T. H. Miller); Tin in Australia; Mining in the East—No. VIII; Richmond Consolidated Mines; Chantales Mining Company; Spanish Mining Terms; Sandwell Park Colliery (J. A. Brown); the Plymmon and Cardiganshire Blended Mine, No. II. A. Francis); Foreign Loans, English Railways, and Cornish Mines (F. Tredinnick); Cola Mines, Ireland (T. Tonkin, M.E.); Bodidrith Mining Company (J. J. Reynolds); North Treskerby Mine (R. Symons); Railways in Cornwall—No. IV. (R. Symons); Capital, and its Employment (A. E. Cooke); Royal Cornwall Polytechnic Society—The United States Coal Trade—Brixia Lake and Sulphur and Quicksilver Deposits of California—The Quicksilver Markets—The Copper Trade—The Tin Trade—The Coal Trade—Mining Enterprise in Chile—Foreign Mining and Metallurgy—Meetings of Cardiff and Swansea, Wheal Grenville, Kilneth, and North Treskerby Companies, &c.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, SEPT. 8, 1876.

	£ s. d.	£ s. d.
IRON.		
Pig, G.M.B., f.o.b., Clyde... 2 16 0	2 16 0	—
Scotch, all No. 1... 2 16 0-3 7 6	2 16 0-3 7 6	—
Bars, Welsh, f.o.b., Wales 5 15 0	5 15 0	—
" in London, 6 10 0-6 15 0	6 10 0-6 15 0	—
" Stafford, " 8 0-10 0 0	8 0-10 0 0	—
" in Tyne or Tees 8 0 0	8 0 0	—
Swedish, London... 5 11 0-11 10 0	5 11 0-11 10 0	—
Rails, Welsh, at works... 5 10 0	5 10 0	—
Railway chairs... —	—	—
" spikes... —	—	—
Sheets, Staff., in London 9 15 0-10 0 0	9 15 0-10 0 0	—
Plates, Staff., in London 9 10 0-10 0 0	9 10 0-10 0 0	—
Hoops, Staff... 8 15 0-9 0 0	8 15 0-9 0 0	—
Nail rods, Staff, in Lon. 7 10 0-7 15 0	7 10 0-7 15 0	—
STEEL.		
English, spring... 14 0-23 0 0	14 0-23 0 0	—
cast... 5 0-45 0 0	5 0-45 0 0	—
Swedish, keg... 17 10 0-17 10 0	17 10 0-17 10 0	—
" fag. ham... 19 10 0- —	19 10 0- —	—
LEAD.		
English, pig, common... 21 15 0- —	21 15 0- —	—
" L.B. 21 15 0-22 0 0	21 15 0-22 0 0	—
" W.B. 23 0- —	23 0- —	—
" sheet and bar... 22 15 0- —	22 15 0- —	—
" pipe... 23 5 0-23 10 0	23 5 0-23 10 0	—
" red... 23 10 0- —	23 10 0- —	—
" white... 25 0- —	25 0- —	—
" patent shot... 25 10 0- —	25 10 0- —	—
Spanish... 21 0-21 5 0	21 0-21 5 0	—
QUICKSILVER.		
Flasks of 75 lbs., ware... 8 0 0- —	8 0 0- —	—
SPELTER.		
Silesian or Rhenish... 23 0 0- —	23 0 0- —	—
English, Swansea... 23 0 0- —	23 0 0- —	—
Sheet zinc... 27 0 0-29 0 0	27 0 0-29 0 0	—

* At the works, 1s. to 1s. 6d. per box less for ordinary; 1s. per ton less for Canada; 1s. 6s. per box more than IC quoted above, and add 6s. for each X. Tin-plates 2s. per box below tin-plates of similar brands.

REMARKS.—Our markets up to the present time have not shown that steadiness which is the sure sign of settled improvement, but the demand has been rather of an erratic character. It would, however, be incompatible with former experience of the vicissitudes of trade to expect that it should yet awhile be otherwise, as a season of adversity invariably produces irregularities, disorders, and misgivings, and under such circumstances it is not unnatural that the revivals in the beginning should assume an appearance of uncertainty; it has been, and no doubt will continue to be, the course of business, always excepting sudden convulsions. The causes of the depression have been so recently alluded to, and are so well known that it is needless to refer to them again more than to say that they are fast being overcome. Some are already exhausted, and can do no further harm, and others are in course of removal, so that there now remains comparatively little to hinder the restoration and advancement of commerce upon a permanently safe and sound basis. But before our markets have fully and entirely recovered they will undoubtedly be subject from time to time to spasmodic movements, nevertheless the intervals of gloom will diminish and gradually disappear, and there need be no apprehension regarding future business. It is evident that the worst that could possibly befall our market is over, and that another severe shock is likely to be sustained, provided an European war is avoided. As there are so many different classes and such varied interests at work in an important branch of commerce like that of the metal trade, it is not surprising to find some amongst the number who from their phlegmatic tendencies always take a desponding view of business, however good and promising it may be. Others, who are deeply opposed to any improvement from the fact that such a change would defeat and spoil the whole of their carefully matured plans, and not a few who are never prepared with the necessary means to act when the opportune moment arrives—these classes combined naturally exercise some little influence, as may easily be imagined, especially upon a quiet market and immediately following upon a crisis, and when confidence has been so severely shaken; but, notwithstanding all these adverse influences in operation, the principal reasons for anticipating an expansion of trade are too unmistakable, and are daily becoming more apparent to be materially affected thereby. A temporary lull may yet ensue; indeed, we have gone further, and said a pause will take place, and that there will be no safety in making an upward movement until the peace of Europe is secured, but that is all, however, which is wanted to give the desired impetus, as there is no doubt about our having had a good harvest, and that the commercial and financial crisis is over, and that a plethora of money exists, and that prices of metals generally are low, particularly copper and tin.

COPPER.—Since this day week a slight relapse has taken place in the market, but, although the price is quoted down, yet there is no disposition to effect sales at the reduction. A few parcels here and there are scattered about in a sensational sort of manner; probably with the object of creating alarm, but holders are too powerful to be influenced by such transactions, and will not part with their copper unless the position of the market alters very materially. The opinion of those who are in the best way of obtaining reliable information regarding the future supplies of Chile is favourable, and in confirmation of this view they do not hesitate to give support to the market by increasing their holdings, which is the highest expression of opinion they could possibly give. There can be but little doubt regarding the ultimate issue, and consumers should not delay making their contracts. The price is already so low that any lower price is very improbable. The public sale of Wallaroo is fixed for Sept. 26; the quantity to be offered is only 1565 tons, against 1800 tons at the previous sale. The assortment consists of 1261 tons in cakes and 305 tons in ingots. The present market price is not quite equal to that realised at the sale in June, but the diminished quantity ought to cause an advance in price, and there is no question but what it would be higher if political affairs were to assume a brighter aspect; meanwhile, there exists such uncertainty as to what is eventually to be done with Turkey that everybody is kept in a state of suspense, and know not now to act. The demand for manufactured is quiet, and there is also very little enquiry for yellow metal. Chili bars close with buyers at 70s., but sellers refuse orders under 70s. 10s. to 71s., usual cash terms. Wallaroo 77.

IRON.—No new feature of any importance has occurred, and the market for all kinds remains undisturbed. The amount of business transacted is exceedingly limited, consequently uninteresting, and until the demand increases very considerably to what it is at present, buyers will continue to have the turn of the market in their favour, and sellers will probably be willing to meet limits in such instances where the concession is not too great. The price, however, is already so low that the works cannot afford to make further reductions, and it is only with the object of keeping their mills going, and not from the profit which they derive from present business that induces them to effect sales. According to existing arrangements, therefore, prices cannot materially decline, but to enable sellers to obtain current rates it has been found necessary to curtail the production so that many mills are only partly employed, and others have been stopped entirely. Such an unsatisfactory state of things certainly ought not to continue. It is particularly injurious to the interests of both masters and men, as well as to a great many other people of this country. The want of a proper understanding between masters and men is such an oil complaint that it is becoming perfectly disgraceful; instead of meeting a difficulty and doing everything in their power to remedy it, they only go on in the same dissatisfied state, and nothing is arranged to the benefit of either side or to the community at large. The only way in which the demand is likely to be stimulated is by a reduction in prices, and that cannot be submitted to unless the cost of manufacture in the same manner is lessened. Economy is practised and machinery substituted whenever practicable in place of hand labour, and yet it is not sufficient to cope with the competition of foreign houses. There remains but one alternative, and that is for the men to agree to a lower scale of wages. By delaying to take this necessary step it only protracts the period of their suffering and loss to themselves is thereby increased.

The longer the men continue obstinate and deaf to the proposition it will tend to increase their misery and dissatisfaction. With full employment there would be contentment, and what if men do have to work a little harder for the same money? The British workman is surely not degenerating so much as to dislike work while his physical powers are equal to those of past ages. The delay is of very serious importance, and unless some accommodating terms are agreed upon very shortly the shipping trade will further diminish and gradually fail away.

From all parts of the country the account is most unfavourable, and our market is without the slightest sign of animation. Scotch pigs have been quiet, and rather lower in price: mixed numbers now quoted about 5s. 10s. 1d. to 5s. cash.

	SHIPMENTS.	TONS
Week ending Sept. 4, 1875	10,616	
Week ending Sept. 2, 1876	9,637	
Decrease	979	
Total decrease for 1876	72,140	

LEAD.—The market for this metal has undergone very little change, so far as regards English, and sellers continue to show firmness; but Spanish is lower, and can be bought at 21s. 5s. for S. brand.

QUICKSILVER.—Importers still adhere to the former price of 8s. per bottle, but although it is a lower price than what has generally been ruled for the last few years, yet the demand does not increase, and shipments to the East are comparatively small.

STEEL.—The enquiries for both English and foreign are extremely limited. The reports from Sheffield are anything but satisfactory. The men are mostly on half time, and many of the melters have nothing whatever to do.

TIN.—The increase which took place in the stock of foreign tin during last month is being made the most of by the "bars," and they are using every effort to depress the market for their own purpose, and as the demand is quiet for the moment they may knock down prices slightly, but holders are very firm, and are favourably impressed with the future of this metal, therefore the quantity obtainable on the spot is likely to be small, and should it transpire in course of the month that the deliveries are proceeding satisfactorily there may be a sudden rebound, and very probably the "bars" will again be caught. Buyers do not complain of the price, it is already lower than they have generally been accustomed to pay, and it does not in any way interfere with consumption, nor would it even be much higher than than the present, consequently there is really no necessity for prices being further depressed. It would be well for importers to discourage shipments for awhile, because any falling off in supplies would very soon effect a reduction in stocks, and bring the market into a healthier condition. The arrivals last month were very heavy, and the stock accordingly increased. It is not improbable that account, as well as for other reasons, that this month the arrivals may be fewer up to the present date; they are certainly very light, and one ship with 90 tons is reported to have sunk beyond recovery. The stock at the end of this month may be found to have decreased, and the price increased. The Dutch sale of Banca is announced for Sept. 25; the quantity to be offered is about 30,000 slabs. The consumption of foreign tin must necessarily increase as the production in Cornwall is considerably decreasing, owing to the present extremely low price, and miners would best study their interest by not selling ore for short time, as this would cause a run upon the stock of foreign, and place the market considerably higher.

TIN-PLATES.—No alteration; prices keep steady, and the demand moderates.

THE IRON TRADE—(Griffith's Weekly Report).—Friday Evening. The Glasgow market has remained steady during the week with only slight changes in price. This afternoon at the close warrants were sold at 5s., a shade below the price last week. Makers' iron is almost unchanged, as will be seen from our quotations for No. 1—Gartsherrie, 6s. 6d.; Coltness, 6s. 6d.; Calder, 6s. 6d.; Langloan, 6s. 6d.; Summerlee, 6s.; Monkland, 5s. 6d.; Glasgow, Glengarron, 6s. 6d.; Eglinton, 5s. 6d., f.o.b. Ardrosson; Shotts, 6s. 6d., f.o.b. Leith; Kenniel, 5s. 6d., f.o.b. Boness. Our market for all kinds of iron remains unchanged. The late practice of buying to supply immediate necessities is still seen in, we have, no transactions of magnitude to report this week. There is an order on the market for 13,000 tons of iron rails; the disposal of it is in the hands of a gentleman well known in Staffordshire, and it is not at all unlikely that this lot will be taken by a Cleveland house now in negotiation for it. There are several parcels of steel rails, but the makers are not disposed to give way in price; indeed, steel rails are firmer if anything in price, pigs on the West Coast being now held by the makers for more money. Barrow pigs are advanced 2s. 6d. per ton. The advance of 1s. per ton in the price of coal in one important section of the Black Country has placed further difficulties in the way of the smelters. If the colowners of the Dudley district follow the example of the Cannock Chase Association, and advance the price of thick coal, there will be no alternative but blowing out numerous furnaces in the Black Country. There is no change in the value of pig iron on the Glasgow Exchange. Hematites on the West Coast are now held by the smelters for an advance of 2s. 6d. per ton. There have been more doing in Blaenavon pig-iron. The noted makers of Staffordshire bars and the tin plate makers have been purchasing Blaenavon more freely this week. The raw material in Northamptonshire is unchanged in value, and with regard to Staffordshire brands of pig iron, the makers of the best qualities can make no further concession. The finished iron trade in Staffordshire, both North and South, is quiet and inanimate. The sheet iron trade, however, is an exception. In this department the makers generally have more orders for sheets than other kinds of iron. The Consett Iron Company issued their report to the shareholders at a meeting held September 2. The profit for this year is 8s. 25s. 2s. 3d. The directors say, "The profit is largely attributable to judicious sales for forward delivery, made in anticipation of prices declining. These contracts are now worked out our directors cannot anticipate any such favourable results for the year on which we have entered." The dividend declared is at the rate of 14 per cent. per annum.

Mr. MURRAY—TIN: The deliveries of foreign for August, though fairly good, could not absorb the large quantities arriving, and the result is that we enter September with a largely increased stock both here and in Holland. The last day or two we have seen an increased want of confidence in the article on all sides, with a drop of 2s. per ton. Meanwhile, we are greatly informed that 72s. is a very safe basis for capitalists to work upon, and without venturing to contradict this assertion rudely, it may be remarked "that the proof of the pudding is in the eating." COPPER has receded about 17. during the past month, the feeling last night being very quiet. The quantity of Wallaroo to be offered on the 26th inst. is comparatively small, there being no more than about 1260 tons of cakes, of which 180 tons, although catalogued, are yet afloat, so that competition for this stuff should be more brisk than it was at the last two sales.

Messrs. GRENFELL and RICKARD—COPPER: Increased dulness marks our market, and manufactured can now be obtained on easier terms. There are rumours of large charters to be advised to-day or to-morrow, and the demand is not able to keep sellers going. The adverse move in the Exchanges has interfered very materially with prices. Chili bars are not worth more than 70s. 10s., and Wallaroo is dull at 70s. 10s., notwithstanding the small sale advised for the 26th inst. (1560 tons), which has to last consumers till January 16, the day fixed for the following sale. We quote ores at 13s. 6d., to 13s. 91., and regular nominal. At the last moment of writing it is reported that charters the last fortnight in August are 3500 tons. TIN is again dull, and prices are falling. The Dutch sale of Banca for the end of the present month is advised at 29,000 slabs. Stocks have increased in London, but will probably show a considerable decrease by the end of October. LEAD is very strong, owing to scarcity of Spanish, and 21s. 10s. is asked for good brands of English.

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Messrs. PIXLEY and ABBELL—GOLD: Large amounts have come to hand from Australia, India, and Russia, and there are no new arrivals. The Bank has received 1,19,000, during the week. Very considerable sums are now on the way from St. Petersburg, and these will also be sent to the Bank. Withdrawals of sovereigns for the Cape, Brazils, and Alexandria have taken place, but only to the extent of 129,000. We have received since the 31st ult.: 26,800t. from the Pacific, 29,910t. from the Brazils, 57,310t. from Australia and India, 488,000t. from Russia, 1,162,020t. SILVER: During the week the price of bars remained at 51s. 6d. per ounce, at which price the silver by the Pacific steamer was sold. The market experienced a fall yesterday when the result of the tenders for the India Council drafts became known, and it was seen that a further reduction of 1d. per ounce had been submitted to, and we quote the price as 51s. 6d. per ounce as the latest price for to-day. The Liguria brought 40,910t. from the Pacific, and the P. and O. steamer 716,000t. from India: 42,850t. has been received from America, and about 220,000t. from Germany. The steamer leaving Southampton to day takes 170,650t. to India and China.

With the exception of a demand for, and an improvement in the prices, of one or two lead mines the MINING SHARE MARKET has been dull since our last, without alteration in prices, which generally remain merely nominal. The mines dealt in have embraced East Van, at a good rise; Tankerville, Roman Gravels, Rookhope, Glenroy, Pennerley, Penstruthal, Van Consols, Glyn, Ladywell, Wheal Crebor, Parys Mountain, West Chiverton, Santa Barbara, and others.

Tankerville, 10s. 10s. per ton; the sales of ore for the month—150 tons—realised 14s. 10s. per ton = 21s. 5s. West Tankerville, 1s. to 1s. 10s.; the sales here—30 tons—realised 14s. 10s. 6s. per ton, or 42s. 00 for the month. Roman Gravels, 1s. 10s. to 1s. 10s. north of old shaft, is worth 5 tons per fathom, and likely to improve. The 95 south is worth 3 tons of lead per fathom. Rookhope, 1s. 10s. to 1s. 10s.; West Chiverton, 1s. 10s. to 1s. 10s.; West Craven Moor, 10s. to 11s.; Ladywell, 1s. 10s. to 1s. 10s.; Pennerley, 1s. 10s. to 1s. 10s.; Old Trebberget, 4s. to 6s. East Van has advanced to 10s. 11s.; the 25 fm. level, west of Tempest's shaft, looks very promising, and is, the agent thinks, skimming the point of a productive lode. Van, 37 to 39. Van Consols in demand at 1s. 10s. to 1s. 10s.; Glyn, 33s.; Great Laxey, 18 to 19; North Laxey, 12s. 6d. to 17s. 6d. Glenroy, 5 to 6; the water is now down to the roof of the 65, and if all goes well the mine will be completely drained by Monday next, after which the important points that have been reported in the levels above will be tested in depth. Pennant, 5 to 5s.; Great West Van, 1s. 3d. to 1s. 9d.; Saint Patrick, 1s. 10s.

Parys Mountain, 1s. 6d. to 1s. 6d.; the agent writes that he has just cut into a small joint on the 90 fathom level cross-cut south, which consists of a soft prian, lumps of sulphur, and copper ore; and a strong feed of water boiling up from the bottom of the end, which looks as though the lode was not far off. Devon Great Consols, 2s. 10s. to 2s. 10s.; in the 160 east the lode has been taken down home

to north wall, and is

Baker shaft 66 ft. Sweetland Creek, $\frac{1}{2}$ to $\frac{2}{3}$; at the date of last advices Mr. G. D. McLean was steadily washing, and reports that he could see no change in the prospects. It gives no intimation as to when the run would be concluded.

There has been a little more enquiry for shares in British dividend-paying lead mines, and the market presents a somewhat better appearance. Van, 36 to 38; there is not any alteration to report this week. The mine is looking remarkably well, and all operations are progressing as usual. Van Consols, 1 $\frac{1}{2}$ to 1 $\frac{3}{4}$; the new drawing-shaft is now cased, divided, and laddered to nearly 75 fms. from surface; it will be complete to bottom in about one month. The valuable course of ore in the bottom of the mine, which has yielded some 2000t. of lead out of a very small working under the most disadvantageous circumstances, having (until this shaft is completed) to draw water and stuff through winzes 40 fms. high, will be shortly available.

Great West Van, 11s. 3d. to 13s. 9d.; all work progressing regularly. The recent discovery of ore driving west from cross-cut still holds good, worth 2 tons of lead per fathom. Other points as last reported, with the exception of the 46 west, on old lode, which has improved. Glyn, 3 to 3 $\frac{1}{2}$; the development of the Van lode in this mine is looked forward to hopefully; there is now about 1000t. worth of lead ore at surface, and a large quantity standing for stoping underground, considering the shallow workings at present attained. The mine has nearly 200 fathoms on the course of this lode between the shaft and the Van Consols Mine. Grogwinion, 5 to 6; the mine it is reported continues to open out well at all points, and particularly on No. 3 lode in the intermediate level. Wye Valley, 6 to 7 $\frac{1}{2}$; the annual meeting will be held during the current month, when a dividend will be declared. West Wye Valley, 3 $\frac{1}{2}$ to 4 $\frac{1}{2}$; the 23 has much improved, and good stoping ground is being opened up. St. Harmon, 3 $\frac{1}{2}$ to 3 $\frac{3}{4}$; steady progress is being made in driving the levels, and the results are considered exceedingly satisfactory. Llanidloes, 3 to 3 $\frac{1}{2}$; the 72 is making very satisfactory progress. A sampling of lead will take place in a few days. West Goginan, 1 $\frac{1}{2}$ to 2; this mine is about to make its first sale of lead ore. Suitable dressing machinery has been erected, worked by water-power, and good returns of lead ore expected.

Pennerley, 1 $\frac{1}{2}$ to 1 $\frac{3}{4}$; the 120 west is said to have greatly improved since last report, and shows every appearance of a further speedy improvement. Other parts of the mine unchanged. Pateley Bridge, 4 to 4 $\frac{1}{2}$; the Lumb vein in the 10 continues large and productive, worth 2 tons of lead ore per fathom. The winze sinking below this level, in the west end of the drivage, is down 12 ft.; lode producing over 2 tons of lead ore per cubic fathom. The cross-cut in the 20 towards this vein is being pushed on with all speed. Fielding's vein in the 20 is presenting a very promising appearance for an improvement. The company have sold a further lot of 35 tons pig-lead. West Pateley Bridge, 5 to 5 $\frac{1}{2}$; this mine is opening well as developments progress. A report on the works at present being carried on will be found in the usual column.

Cathedral (new issue), par to 4 prem.; it is reported that there is a large lode at the engine-shaft producing fine stones of copper ore. There is a large section of copper ore ground waiting the commencing of the western winze, when the ground for stoping will be on tribute. Penstrithal, 11s. 3d. to 13s. 9d.; the mine continues to open up well for copper ore; the shaft is being rapidly pushed down to a 70 fm. level, the depth at which the neighbouring rich old mine Tresavean, commenced its riches: 40 tons of copper at the usual rate sales have been sold this month.

Subjoined are the closing quotations:—

Ashington, $\frac{1}{2}$ to 1 $\frac{1}{2}$; Carn Brea, 32 to 34; Devon Great Consols, 2 to 2 $\frac{1}{2}$; Darton, 32 to 34; East Cardon, $\frac{3}{4}$ to $\frac{5}{6}$; East Van, 10 $\frac{1}{2}$ to 11; Glyn, 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$; Great Lixey, 18 to 18 $\frac{1}{2}$; Great West Van, $\frac{3}{4}$ to $\frac{5}{6}$; Hington Down, $\frac{1}{2}$ to 1; Monk Valley, 1 $\frac{1}{2}$ to 1 $\frac{1}{2}$; Pateley Bridge, 4 to 4 $\frac{1}{2}$; Parry Mountain, 3 $\frac{1}{2}$ to 4; Pennerley, 1 $\frac{1}{2}$ to 1 $\frac{1}{2}$; Penstrithal, 11s. 3d. to 13s.; Roman Gravels, 3 $\frac{1}{2}$ to 4; Tankerville, 10 to 10 $\frac{1}{2}$; Tincroft, 17 to 18; Van, 36 to 38; Van Consols, 1 $\frac{1}{2}$ to 1 $\frac{1}{2}$; West Assheton, 1 to 1 $\frac{1}{2}$; West Basset, 4 to 5; West Chiverton, 17 to 18; West Pateley Bridge, 1 $\frac{1}{2}$ to 2; West Tankerville, 1 $\frac{1}{2}$ to 1 $\frac{1}{2}$; Wheat Graveline, $\frac{1}{2}$ to $\frac{3}{4}$; Almada and Tinto, 3 $\frac{1}{2}$ to 4 $\frac{1}{2}$; Argentine, 5 to 5 $\frac{1}{2}$; Birriyee Creek, $\frac{1}{2}$ to $\frac{3}{4}$; Cape Copper, 37 to 40; Cedar Creek, $\frac{1}{2}$ to $\frac{3}{4}$; Chontales, 3-16 to 5-16; Colorado Terrible, 1 to 1 $\frac{1}{2}$; Coles of Chile, 5 to 5 $\frac{1}{2}$; Don Pedro, 1-16 to 3-16; Elberth and Aurora, 8 $\frac{1}{2}$ to 9 $\frac{1}{2}$; Frontino and Bolivia, 2 $\frac{1}{2}$ to 2 $\frac{3}{4}$; Kapanga, 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$; New Querbara, 3 $\frac{1}{2}$ to 4 $\frac{1}{2}$; New Pacifica, $\frac{1}{2}$ to $\frac{3}{4}$; Pestarena, 3-16 to 4 $\frac{1}{2}$; Richmond Consolidated, 8 $\frac{1}{2}$ to 9; St. John del Rey, 340 to 350; San Pedro, 7 to 11 $\frac{1}{2}$; Sierra Buttes, $\frac{1}{2}$ to $\frac{3}{4}$; South Aurora, $\frac{1}{2}$ to $\frac{3}{4}$; Sweetland Creek, $\frac{1}{2}$ to $\frac{3}{4}$; Tecomia, $\frac{1}{2}$ to $\frac{3}{4}$; United Mexican, 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$; New Zealand and Karangas, 3 to 3 $\frac{1}{2}$; Blue Tent, 3 to 3 $\frac{1}{2}$; Oregon (pref.), 4 to 4 $\frac{1}{2}$; West Lode Bridge, 5 to 5 $\frac{1}{2}$.

COLLIERS.—During the past week there has been a slight increase in the business done in this class of shares, investors having begun to come forward to buy, in the belief that the lowest rates have been touched in the coal markets; and the improvement in trade in several of the fuel-producing districts goes a long way to support their ideas on this subject. Except in the Middlesbrough district, there is little or no improvement in the iron trade; and, no doubt, a greater consumption of iron, and the blowing of the furnaces, are necessary to bring about a great rise in the price of coal. Yet even this is by no means far distant. In the Midland district the iron trade is, as a whole, better than for some time past, the price of pig-iron is stiffer; merchants seem inclined to give orders for next year's delivery, and the better classes of iron are readily sold off. At Newcastle large quantities of coal are being shipped. At Barnsley trade is better, the demand for winter stocks having commenced, while from the Derbyshire collieries a much larger tonnage of coal has been sent over the Midland and Great Northern Railways to the South. Steam-coal is better, and those engaged in the coal and iron markets have been considerably strengthened by the advance of 1s. per ton in the price of Cannock Chase house coal, and in the better classes of fuel household purpose—there is still a further upward tendency.

In South Wales there is a great stir in the steam-coal trade, which has decidedly improved; while the probable increase in the iron trade must tend to give an impetus in the right direction. In fact, the Great Western Railway Company is placing an order for 37,000 tons of rails, to be delivered next year; and the Government Inspectors, conclusively show that repairs have not been kept sufficiently in hand, and that nearly all the companies must be long come into the market with large orders for iron, &c. The impetus which will consequently be given to the iron, and, *ergo*, the coal, trade will be further stimulated by the increasing exports, which have hitherto been augmented at an enormous rate, and twenty. Chapel House shares have been largely dealt in at various prices between 2 and 4 $\frac{1}{2}$, and close the week a little flatter than at the date of our last issue—a large number of shares having been thrown on the market in consequence of the holders having been frightened by the operations of some individuals. Though doing great damage to any company not so soundly based as is Chapel House by the profitable nature of its trade and the enormity of its debts, to the public and the general investor such operators are of some value, as in many cases their machinations recoil upon themselves, the buyer succeeding in securing a *bona fide* investment at much below its intrinsic value. Of late Chapel House there is one evidence which, in our opinion, is as satisfactory as any that can be obtained. It is that the officers of the company have done their best to swamp the market, and thus lower the price of the shares to those likely to become so. Shareholders and investors are alike liable to juries of the property by the *ipso dictu* of either the officers of the company or the one-sided statements of market operators, but to visit the colliery without being highly delighted with it; and one connected with Chapel House, has after his inspection written a letter, from which, by the courtesy of the secretary, we are enabled to extract the following:—

"On making careful enquiries I was much astonished at the small cost of these works—certainly a third less than what I have seen in many other collieries, and although I am personally unacquainted with any of your directors, I cannot but admit to them, not only for their able and skilful management, but also for their prudent economy in carrying out such costly and substantial works at so small an expense compared with what I have seen in other collieries with which I am connected. Allow me to say that I regard the satisfactory condition of this colliery and its great prospects for the future more as the result of its able management and prudent and economical expenditure than of the colliery itself. Your fortuitous accounts opened in rails, foreign stocks, and mining shares, upon receipt of the usual cover.

SPECIAL BUSINESS in the undermentioned, viz.:—

Aberdulau. Hornachos. Prince of Wales.
East Van. Llanidloes. Pestarena.
English and Australian Malpaso. Port Phillip.
Copper. Malabar. South Aurora.
Flagstaff. Exchequer. West Goginan.
Grogwinion. Tolima. West Wye Valley.

Investors should consult Mr. C. as to the purchase of Richmonds. Full and latest particulars of the mine can be had on application.

VICTORIA (LONDON) MINING COMPANY (Limited).—£1 shares, fully paid, specially recommended, paying dividends half-yearly at the rate of about 16 per cent. per annum on present price.

MESSRS. HARLAND AND CO., STOCK AND SHARE DEALERS, 235 and 236, GRESHAM HOUSE, OLD BROAD STREET, LONDON, E.C.

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CAPTAIN ABRAHAM FRANCIS MINING AGENT, ENGINEER, AND SURVEYOR GOGINAN, ABERYSTWITH.

proximity of the colliery to Newport will enable it to deliver its produce into vessels at a rate of 6d. to 1s. per ton less than any of the collieries at Blaenavon, Ebbw Vale, &c. Cardiff and Swansea shares close the week at 1 $\frac{1}{2}$ to 2. There are no advices of an interesting character from this district. Bilson and Crump close at 7 $\frac{1}{2}$ to 8 nominally, but little doing. In Yorkshire Collieries we find Thorp Grawber shares are unchanged at 2 $\frac{1}{2}$ to 3, and New Sharston flat at 4 $\frac{1}{2}$ to 5. In the Midland district Cakemore shares close at 2 $\frac{1}{2}$ to 3; Cannock and Huntington, 2 to 1 dls.; Hopwood, 9 $\frac{1}{2}$ to 10; Ivy House, 10 $\frac{1}{2}$ to 11 $\frac{1}{2}$; Mid-Cannock, 2 $\frac{1}{2}$; Sandwell, 2 $\frac{1}{2}$ to 2 $\frac{1}{2}$; Spon Lane, 4 to 5; and West Cannock, 10 to 10 $\frac{1}{2}$.

HALIFAX.—Sept. 7: The following quotations are from Mr. J. H. Thackrah's list:—Halifax and Huddersfield Union Bank, 29 $\frac{1}{2}$; Halifax Joint Stock Bank, 29 $\frac{1}{2}$; Halifax Commercial Bank, 24 $\frac{1}{2}$; London and Yorkshire Bank, 27s.; John Crossley's, 11 $\frac{1}{2}$; Whitworth and Co., 8; Elland Gas, 20; Rastrik Gas, 19 $\frac{1}{2}$; Bradford Brick and Tile, A, 20 $\frac{1}{2}$; ditto, B, 9 $\frac{1}{2}$; Charlestown Brick and Tile, 9 $\frac{1}{2}$; Ripponden Commercial, 11; Hebden Bridge Cotton, 10; Yorkshire Boiler Insurance Company, 22s. 6d.; Norton Brothers, 8.

A cost-book company, with a capital of 10,000*l.* in shares of 2*l.* each, has been formed to work the EAST TRESAVEAN COPPER MINE, in the parish of Gwennap, Cornwall. The grant is about 400 fms. from east to west on the course of the lodes, and 300 fms. in width, affording scope for opening out a deep and extensive mine. The property is held at one-twentieth dues, and it will be seen from the prospectus, published in another column, that it is in close proximity to mines that have been immensely productive and profitable, being on the line of continuation (eastward) of the celebrated Tresavean Mine, which no longer than 40 years back figured as one of the greatest dividend-paying mines in Cornwall. In the year 1833 the shareholders received in dividends 60,000*l.*, the shares (100*l.*) advanced from 10*l.* to 200*l.* each. The mine continued paying highly remunerative dividends for many years, amounting in the aggregate to 500,000*l.* It is mentioned that the shareholders will have the full benefit of the capital subscribed, there being no claim made for promotion money or free shares. The object is to offer and open out a good mine on the principle of equitably advantageous co-operation, the cost of leases and out-of-pocket expenses consequent on the acquirement of the grants being, of course, charged to the company. One-half of the capital will be privately subscribed, leaving only 2500 shares to be issued, which will be allotted according to priority of application. Great confidence is felt that the enterprise will prove successful.

The DRYBURNSIDE SILVER-LEAD MINING COMPANY has been formed, with a capital of 5000*l.*, in shares of 50*l.* each, for the purchase of the property of the same name, and leaves 1000*l.* for working capital, a sum ample in the opinion of practical authorities to carry out the works recommended by Mr. George Henwood, and whose opinions, from his extended experience, inspire, according to the prospectus, unbound confidence. The lodes are commanded by "day or dry drifts" from the River Wear, with backs of 1000 ft. Operations have been carried on at two points, though on a limited scale. The yield was considerable; both the workings are mere surface trials, and for their extent the lead raised is referred to as confirming their great value. The only machinery required is for dressing purposes, and this will be paid for out of the works, which are now in full operation. It is stated that silver lead ores can be at once raised, and that profits will immediately accrue.

The secretary of the New Quebrada Company (Limited) has received advices of the arrival at Swansea of the Jane Francis, the vessel conveying the first cargo of copper ore shipped from the mines of the company.

The Copiapo Railway Company have declared a dividend for the second quarter of the present year at the usual rate of 8 per cent. per annum.

Mrs. Montagu Higginson and Mr. Arthur Higginson have commenced business as coal merchants at 19, Sweeting-street, Liverpool, under the style of Montagu Higginson and Co.

The creditors of the Ilton Rhyn Collieries (Limited) are requested to send particulars of their claims to the liquidator by Oct. 2.

The creditors of the British Imperial Insurance Corporation (Limited) are requested to send particulars of their claims to the liquidator by Oct. 31.

Mr. J. H. Tilly (Tilly and Co., public accountants) has been appointed by Vice-Chancellor Hall official liquidator of the City of London Supply Association and Clerks' Club (Limited).

The directors of the South Leicestershire Colliery Company (Limited) notify that on and after Oct. 1 a premium of 5*l.* per cent. will be charged on the shares of the company. We learn that the company have sunk to a depth of about 120 yards, and at the rate at which the work is being prosecuted—more than 10 yards per week—it is quite calculated that the deep main coal will be reached by Christmas next.

PETITIONS to wind up the Hall O'Lee and Stanfield Collieries Company (Limited) and the Kosher Meat Supply Association (Limited) have been presented to the High Court of Justice.

TANKERVILLE.—In accordance with the promise made by the Chairman at the general meeting, held in London in July, two of the directors—Messrs. Samuel York and Peter Watson, together with Mr. Murchison, the secretary—attended at the mine on Wednesday, to meet the shareholders who might be desirous of inspecting the mine and seeing the working of the new engine recently erected at Watson's engine-shaft. The cost of this engine and boiler, with their erection, including the houses and the necessary alterations in the pitwork, &c., has amounted to about 1500*l.*, which sum has been paid out of profits, besides the dividends (12,000*l.*) during the last twelve months. The working of the new machinery gave the greatest satisfaction, reflecting the highest credit on all concerned.

NORTH HENDRE (Lead).—This mine has greatly improved the last two months, and is now producing more than double the quantity of ore ever raised before. The 50 tons sold last Holywell sale realised an average of 15*l.* per ton, and we understand 100 tons has been sampled for next sale, Sept. 14. Tramways have been laid through the mine, and winding machinery, &c., fixed. It is expected that this quarter's profits alone will enable the directors to pay a dividend of 10 per cent. in October.

CAPTAIN TRELEASE, now in London, is OPEN to ENGAGEMENTS TO INSPECT AND REPORT ON ANY CLASS OF MINES in all PARTS of the WORLD. Knows Spanish, Portuguese, a little French and Italian. Goes to Cornwall in a few days.

Address: 26, Lansmere Terrace, Victoria Park, E.; or West End, Redruth, Cornwall.

TO SHAREHOLDERS AND INVESTORS.

WEST END OPEN STOCK EXCHANGE, for the SALE, BY PUBLIC AUCTION, of Stocks, Shares, Reversions, Ground Rents, Equities of Redemption, Unsettled Judgments, and other Securities of every kind.—FIRST SALE, Friday, Sept. 15, at the Large Room, Newman street, Oxford-street, at Twelve o'clock precisely. Commission 1*l.* per lot for putting up (payable in advance), and 1*l.* per cent. on sales.

Instructions, not later than Wednesday morning's post, to be addressed "Manager," 45, Burschell-road, Peckham, S.E.

MESSRS. JOSEPH J. REYNOLDS AND CO., STOCK AND SHARE DEALERS, 26, FINSBURY PLACE.

MESSRS. W. J. TALLENTIRE AND CO., STOCK AND SHARE BROKERS, 20, CHANGE ALLEY, CORNHILL, LONDON, E.C.

Transact business in Stock Exchange Securities and Mining Shares of every description, either for immediate cash or the usual bi-monthly settlements, and also afford advice personally or by letter to executors, trustees, capitalists, and investors of every class in the selection of Securities for safe and profitable investment, their experience of the markets, extending over a period of more than sixteen years, together with special facilities for acquiring information, enabling them to act beneficially for clients.

They have established Corresponding Agencies in all the principal towns of the United Kingdom, and are prepared to deal in the various local Stocks and Shares at close prices. Orders per post or telegraph receive prompt attention.

INVESTORS SHOULD APPLY for a copy of Messrs. W. J. TALLENTIRE and Co.'s Circular, SENT POST FREE. It contains valuable information on Foreign Stocks (especially South American, Egyptian, and Turkish), Railways, and Lead Mines.

Business transacted in every description of British and Foreign Stocks, Mining Shares, &c. Mr. C. is in position to furnish investors with the most reliable information upon all Mines, Foreign Stocks and Railways, &c.

Fortnightly accounts opened in rails, foreign stocks, and mining shares, upon receipt of the usual cover.

SPECIAL BUSINESS in the undermentioned, viz.:—

Aberdulau. Hornachos. Prince of Wales.
East Van. Llanidloes. Pestarena.
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CAPTAIN ABRAHAM FRANCIS MINING AGENT, ENGINEER, AND SURVEYOR GOGINAN, ABERYSTWITH.

ZINC ORES.

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BUYER OF

1.—CARBONATED AND OXYDED ZINC ORES (CALAMINE, &c.)

2.—ZINC AND LEAD ORES MIXED TOGETHER, BUT DRESSABLE KINDS ONLY.

CAPPER PASS AND SON, BRISTOL,

ARE PURCHASERS OF

LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD,

BRASS SLAGS AND

Notices to Correspondents.

• Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be sent on receipt; it then forms an accumulating useful work of reference.

Will some reader inform me what is the present price of ochre and umber, and is there a ready sale for them when prepared for the market?—J. S.

THE SLATE TRADE.—Can any of the readers of your valuable Journal oblige me with the following information respecting the Welsh slate trade? Are the slates obtained from the Corris and Towy districts equal in quality and value with those from the Festiniog district? If not, what is their respective value and quality? Is the demand as great for them, and what is the computed production of each of the North Wales slate districts?—ONE WHO WISHES TO KNOW.

YORKSHIRE COLLEGE OF SCIENCE.—"L. C. M." (Leeds).—A detailed notice of this institution, and the facilities which it offers for the acquisition of knowledge in Yorkshire and the neighbouring counties, shall be given in next week's Journal.

BRITISH ASSOCIATION.—A great pressure on our spaces has compelled us to postpone a report of the Proceedings at Glasgow, which we had intended for this week's Journal. All matters of interest to our readers will, however, be carefully selected, and given as fully as usual.

THE ISLAND OF ARUBA.—This paper is unavoidably postponed, but shall appear in next week's Journal.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received.—"H. F." (Plymmon): The letter has been forwarded—"Manager" (Leeds); Yes—"M. T."—"Shareholder" (New Consols);—"Amanuensis" (Dublin); It appears to have been a clerical error, but the sense would fully explain the meaning. The MS. was by no means perfect.—"S. B." (York);—"Reider" (Darlington): The letter was not received, or it would have been attended to.—"H. N." (Penzance);—"J. D." (Leeds): We have always found that mine secretaries, when properly written to, have very readily replied to any reasonable application for information.—"Miner" (Redruth): The particulars forwarded appeared in last week's Journal.—"T. W. R."

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, SEPTEMBER 9, 1876.

OUR MINING AND COMMERCIAL PROSPECTS.

We cannot but deplore the pessimist view which some writers of the English press have taken with respect to the present condition and future prospects of the iron trade of this country. Anxious to faithfully report the state of the great staple industries of the Kingdom in its principle centres of industries, we have been obliged to chronicle a depression of long-standing duration and of a severity which probably has no parallel in the commercial history of the present generation. The cloud which has hung long and thick over the seats of our steel, iron, tin-plate, and other articles of manufacture, upon which the stability of England in a commercial point of view still rests, is not yet dispelled, nor, truth to say, do we yet see the proverbial silver lining which is said to fringe the darkest cloud. We admit, therefore, the great and general depression of trade, but we refuse therefrom to adopt the gloomy forebodings of those who prognosticate the decay of our staple trades, and who would write "Iacobid" over the portals of our commercial manufactures. Seasons of depression have their uses quite as much as the seasons of prosperity. The storm is as essential to the physical health of a country and as necessary for the growth and fruition of vegetation as the sunshine. When the atmosphere is highly charged with electricity the lighting storm clears and purifies. So in the manufacturing and commercial world. When business has been carried on at an unhealthy rate, when prices have been inflated far beyond legitimate profits, when all appear to have been living at most luxurious rate, when the men engaged in the iron and coal trades have received wages which their fathers never dreamt of, it is necessary that the commercial storm should come, in order that the atmosphere should be cleared of the causes which have contributed to such an unhealthy state of things, and bring about more solid and permanent prosperity. The present crisis is not the unmitigated evil which some people regard it; it is teaching salutary lessons which must be learned; it is removing many of those ephemeral firms which have sprung into existence, and expanded with mushroom rapidity; and we may depend upon it when the storm shall have passed our principal manufacturers will have received considerable benefit, and trade generally strengthened, because of its more legitimate character.

We have on previous occasions pointed out the principal causes which have contributed to bring about the present crisis in our staple trades. These are the suicidal policy adopted by Trade Union agitators and the large number of limited liability companies and firms of such like description, the directors and managers of which having but little or no capital of their own to risk have been enabled to enter into unfair competition with those firms whose fortune and reputation are at stake, and who, therefore, act with greater caution and prudence. We will not now enlarge upon these causes of depression, but would rather point to a few reasons why, in our opinion, there is no ground for fear or alarm, but rather why our principal merchants and our long-standing firms should take courage and look confidently at the future.

Whatever may be said to the contrary, the two great essentials to a nation's commercial greatness—coal and iron deposits—are practically inexhaustible in our midst. These are, comparatively speaking, easily and cheaply worked, except, indeed, under the adverse circumstances which have lately prevailed, and there is no reason why we should not, on this account at least, hold our own amongst the other nations of the world. Our American cousins and our German and continental neighbours may possibly successfully compete with us in those more delicate manipulations which some appreciate and admire, and we would by no means decry their skill and ingenuity in many of their mechanical arrangements, but the solidity and general excellency which the skilled labour of this country has obtained for its work will always secure for it good markets at remunerative prices. Again, our mechanical appliances are at least equal, if not indeed superior, to any other nation in the world. We are not now the "mere nation of shopkeepers" which NAPOLEON I. christened us with such characteristic severity, but a nation whose principal manufacturers and merchants are men of unlimited capital, and of an indomitable pluck and perseverance which have hitherto carried them through every emergency, and which is still equal to every crisis which shall arise, however trying the ordeal.

But England is still the pioneer of all commercial enterprise, and it is from this, to a very great extent, that we cheerfully regard the future of our staple trades and manufacturers. Who can attempt to press the unlimited fields for British commerce which will inevitably follow in the wake of the great civiliser—the steam engine—as it pushes its way through vast continents, teeming with its myriads of inhabitants, scarcely yet aroused from barbarism? Every now and then new sections of railway, opening up vast countries with thousands and even millions of inhabitants, are being completed and opened up in China, Japan, India, and the "Celestial nations" generally, and as they silently push their way through these new and densely populated regions they open up fresh marts for the legitimate development of English capital and enterprise, and will assuredly create markets for English goods, the benefits arising from which the most sanguine scarce dare to prognosticate. Then, again, can we think for a moment that the heroic labours of a LIVINGSTONE and a STANLEY through "Afric's sunny clime" will not eventuate in that hitherto unexplored and, consequently, unknown continent being ultimately opened up to English civilisation and also to England's commerce. Such must be the inevitable result of the labours of these noble-hearted devoted men; and presuming, perhaps, to venture upon the borders of egotism, we make bold to say that England for many years to come will enjoy to a very large extent a monopoly of those markets to which we now allude, and which are being developed. The perseverance and enterprise characteristic of the race have always in times past secured the prize, and such will be the case in the future. The axiom that "an Englishman never knows when he is beaten" holds good in the commercial battle as

well as on the sanguinary field of war. We are not yet beaten in those many markets of the world where the general excellency of our manufactures and goods have long since been recognised and valued; but even should circumstances arise to induce the belief that it is discreet to gradually withdraw our capital and enterprise from over-stocked markets or countries where competition can be no longer successfully carried on, it is only for fresh fields where greater commercial triumphs can be achieved, and where larger and equally legitimate profits may be realised. We shall never again monopolise the markets of the world with our iron and coal—nay, possibly we may be eventually driven out of many markets which have hitherto proved profitable—but we have unlimited capital at command, we have inexhaustible supplies of coal and iron, and our merchants and manufacturers are still men of perseverance and enterprise, who will open up fresh outlets for our productions. The present storm which is clearing the commercial atmosphere of England of much which conspires to produce unhealthy trade is rendering essential service, and as new markets are gradually developed so will our staple trades enjoy prosperity, being conducted upon more firm and permanent foundations.

THE TRADE UNION AMENDMENT ACT.

On looking over the above Act, which has just come into operation, there are some really important clauses which have evidently received that consideration they deserve. Some of them appear to apply with more force to the mining than to any other body, and the parties interested should, therefore, be made fully acquainted with them, but the least of these is the second section, which provides that notwithstanding anything in the fifth section of the principal Act, a Trade Union, whether registered or unregistered, which ensures or pays money on the death of a child under 10 years of age, shall be deemed to be within the provisions of section 23 of the Friendly Societies Act, 1875. The necessity for such a clause to those who are at all acquainted with certain societies, and how they have been conducted in our great manufacturing and mining centres, will be fully appreciated. Provision is also made for the appointment of a trustee or trustees, where one or more shall leave the country, die, or become bankrupt, or go into liquidation, whilst the jurisdiction conferred by section 12 of the old Act, upon Courts in which the registered office of a Trade Union is situated, may be exercised either by that Court, or by the Court where the offence was committed. Trade Unions carrying on business in more than one country shall not only be registered in the country in which their registered office is situated, but copies of the rules shall be sent to each of the other countries with which they are connected; and unless such be done the Union shall not be entitled to the privileges of the Act. Life Assurance Companies Acts do not apply in any way to registered Unions. Miners above the age of 16, but under 21, can become members of a Trade Union, and enjoy all the rights and privileges with the exception of being members of committees of management, trustees, or treasurers, and can nominate certain relatives to receive any sum of money not exceeding 50/- payable at their death.

The last section of the Act, 16, gives a concise definition of the term "Trade Union" as altered by the new Act, and is clear, explicit, and unmistakeable. It says that the term "Trade Union" means any combination, whether temporary or permanent, for regulating the relations between workmen and masters, or between workmen and workmen, or between masters and masters, or for imposing restrictive conditions on the conduct of any trade or business, whether such combination would or would not, if the principal Act had not been passed, have been deemed to have been an unlawful combination by reason of some one or more of its purposes being in restraint of trade. From the above epitome of the new Act, which only contains some 16 sections concisely drawn up, it will be seen that it is a considerable improvement on the Act of 1871, giving extended privileges to Trade Unions in many ways, and at the same time clearing away certain ambiguities that were apparent in the old Act, and which made its working by no means so smooth as could have been desired.

CO-OPERATIVE COLLIERIES.

Important meetings were held in Leeds and Barnsley on Monday with respect to two collieries in which the principle of co-operation was the leading feature, but which had failed to realise the expectations of the promoters. The collieries alluded to are the Tipton Green and the Shirland, the large sums of money paid for which will evidently be entirely lost. Both of them have a history which is most instructive, and can be gleaned from the proceedings of the meetings. At Leeds it was stated that the capital of the Tipton Green Colliery was 45,000/-, of which sum the Leeds Co-Operative Society found 18,000/-, and the members were asked to subscribe 5000/- more for the purpose of preventing its entire stoppage. It was asserted that Mr. CARTER, the late member for Leeds, who has taken an active part in the co-operative movement, had held out certain inducements to working men to join the company. One of the speakers denied this, because there were great difficulties in the way of a working man being able to get shares in the company. "Considering (the speaker said) that they had made a great bargain they wanted to confine it to a few, but as the Co-Operative Society was composed principally of working men they wanted the working men to participate in the advantages." It need scarcely be said that the statement was received with derisive shouts. Another speaker said the society had been duped, and in March, 1874, a certain gentleman was on the list of shareholders for 1000 shares of 10/- each, but in the following Sept. he disposed of all but 250/- worth, whilst his name now stood in the books for only 780/- This gentleman, it appears, was one of the principals engaged in floating the concern and getting the capital together, but disposed of his shares nearly as fast as he got them, thus showing his great confidence in the concern. This fact was known to the directors, and a notice of it placed in the minute book. Mr. JOHN HOLMES, the manager of the Shirland Colliery, it appears, took a rather active part in connection with promoting the company, and was present, but as he could not speak, there being no proposition before the meeting, he left the room, saying he was obliged to go so as to catch a train. On this being stated an indignant co-operator remarked that "Mr. HOLMES could stop later when he wanted the money." After an excited and stormy meeting it was moved that the society should invest no more money in the Tipton Green Colliery. An amendment to this was proposed that the company should invest 5000/- more. On the amendment being put to the meeting it was lost by a large majority. It was then stated that the result of the vote would be not that the colliery would be sold or bailiffs put in, but that the owners or vendors would at once take possession under the Deed of Agreement. So passes away the Tipton Green Colliery, with a loss of 18,000/- to the working men co-operators of Leeds, and with no little damage to the reputation of gentlemen who have always been working for the advancement in the social scale of the working man, and who by him have been placed in the highest positions.

The meeting held at the miners' offices, in Barnsley, consisted of nearly 120 delegates, with the officials; and the proceedings, although private, we can say were of a most lively character. The Shirland Colliery is a larger concern than the Tipton Green, and embraces a coal field of about 1000 acres, with 40 acres of freehold surface and minerals, together with a very extensive plant, including machinery, engines, horses, railway wagons, &c. From the commencement of the colliery it has been most unfortunate, and after being at work for some time it was mortgaged to Mr. BAILLIE, banker, of Bristol. In the early part of last year negotiations were entered into between the mortgagees and some other persons for its purchase by the South Yorkshire and North Derbyshire Miners Association, which at that time had a large sum of money in hand lying idle. After some delay the purchase was completed in July last year, for the sum of 72,000/-, of which 25,000/- was found by the Association, and the remaining 47,000/- taken in debentures of 12,000/- at 5 per cent., and the remainder at 6 per cent. The Association also provided 5600/- for working expenses, and about 13 months ago operations were commenced, Mr. P. CASEY being appointed the managing director.

Finding that every month's working involved a loss, great dissatisfaction ensued, when Mr. CASEY resigned, and Mr. JOHN HOLMES was appointed to succeed him. After carrying on for a few months Mr. HOLMES said there was a loss on the working, whilst the available capital for wages, expenses, &c., was exhausted. Such is a brief history of the Shirland Colliery, started by working miners and aided in its early career by Mr. MACDONALD as a director, but who soon retired from that position when he found the conditions connected with it. Mr. HOLMES attended the meeting on Monday, and stated the position of the colliery, and that if it was carried on the members of the Association would have to find the sum of 5000/-, as the debenture-holders declined to find any of the money. The subject was warmly taken up by some of the delegates, and a long discussion took place, several of them asserting that since the colliery had never paid since it had been in the possession of the Association it had better be given up without incurring any further loss. Ultimately it was put to the vote, when it was agreed that no more money should be subscribed by the Association or its members for the purpose of carrying on the Shirland Colliery. The consequence is that the property, in accordance with the agreement entered into, will pass into the hands of those from whom it was purchased, so that the entire of the money subscribed will be lost. We have had another signal failure in connection with the co-operative movement in relation to mining operations, and the entire collapse of the Derbyshire colliery that was to regulate the rate of wages the coal workers of Derbyshire should receive from their employers, and the position they should hold in the twofold capacity of masters and men. The miners have had experience, and paid for it, and they now say that they are perfectly satisfied with what they know about co-operation and its promoters in the working of collieries.

THE EXPLOSION ON BOARD THE THUNDERER.

It would be useless to attempt to disguise the fact that the Coroner's enquiry into the causes which produced the fatally disastrous boiler explosion on board the war ship Thunderer has not given satisfaction to the public, but more especially to the large number of scientific men who were deeply interested therein. When this lamentable occurrence took place we ventured to caution our readers as to a too hasty judgment, and deprecated the inference which at the outset was formed in some quarters that there was some radical defect in the construction of the boiler, or criminal neglect in its management. The first reports which were published of the explosion were certainly of such a character as to justify the opinion that the most culpable negligence existed somewhere, and it was only right and natural that the nation should insist upon the most searching investigation, for events of this nature should teach salutary lessons from which much valuable information should be gleaned, whereby similar catastrophes may be avoided in the future. There is quite a consensus of opinion amongst the scientific and engineering authorities who made their examinations that this explosion is primarily due to the sticking of the safety-valves; but the itself would not have produced the lamentable event had not the stop-valve been sealed when it ought to have been opened, and thus contributed to the explosion. We have here some cause for satisfaction on the one hand, but of much dissatisfaction and regret on the other. We are glad to know, on the one hand, that the cause of the disaster is not attributable either to bad materials or defective workmanship; but, on the other hand, we cannot disguise the fact that someone ought to be responsible for so simple a duty as to see to the proper working of the safety-valves and stop-cock, when it is admitted upon all sides that those important and essential safeguards were in an efficient state, and would have done their duty if merely ordinary care and precaution had been exercised.

It was upon this point that we think the Coroner's inquisition scarcely went far enough, and has failed to satisfy the public mind. Here is a splendid vessel, costing the nation 500,000/-, with every modern mechanical and engineering appliance, completely wrecked upon her trial trip, and 40 valuable lives sacrificed. The jury by their verdict have acquitted the contractors of all blame, and virtually say that the material used in the construction of the boiler and safety-valves, &c., was good, and that they were efficient under ordinary circumstances; whilst the scientific authorities say that if the safety-valves had been properly lifted and the stop-cock not closed, the explosion would not have happened. The question, therefore, naturally forces itself upon the mind—Who was responsible for this unfortunate state of things? It should be remembered that the trip was made under exceptionally favourable circumstances. There were on board many superior engineers and able men, the crew was a picked one, and everything conspired to render mishap improbable. If, under these circumstances, such a fearfully disastrous explosion took place, the faith and confidence of the public may well be shaken when the vessel is at sea with only the ordinary working crew on board, and combating, it may be, the terrific storm or tempest. It appears that officers and men were placed to superintend the various departments connected with the machinery of the vessel, and we cannot believe that so essential a part as the safety-valves, stop-cock, and water-gauge were omitted from these instructions. The matter, therefore, after all resolves itself into one of obeyance of orders. Whose special duty was it to see to these safety-valves, and who was responsible for their efficient working? Clearly somebody was, and the onus and blame—for blame there unequivocally was—should be placed upon the proper shoulders. It is no answer to say that it was thought that these matters had been attended to. We have the highest authority for saying that no boiler explodes without warning, and surely that on board the Thunderer was no exception to the rule. If ordinary care had been taken the accident would not have happened; and as the jury have stated that the boiler and its fittings were all which could be desired we must look elsewhere and to other persons beyond the contractors for the cause of the explosion. This lamentable occurrence shows clearly that however perfect the machinery may be, so long as its manipulation depends upon human superintendence occasional oversights will take place, and casualties happen. The many mishaps which have lately taken place in our Navy (which are regarded by some as our pride and our glory) materially shake our confidence in its management. We must have competent and careful men to work our engines as well as to make them, and our scientific and mechanical engineers would do well to direct their attention to the perfecting of some self-acting safety-valve and stop-cock, whereby the safe working of our boilers may be secured, and such fearful sacrifice of human life lessened, if not altogether prevented.

METALLURGICAL INDUSTRY IN RUSSIA.

Great efforts have been made of late years to develop the metallurgical resources of Russia, but it can scarcely be said that hitherto these efforts have proved very successful. The high price of the lignites frequently used as a combustible, the comparative absence of means of communication, and the difficulty of reaching internal markets have hitherto reduced Russian metallurgical establishments—as well national as private—to a position of comparative inferiority, which must be regarded as astonishing when account is taken of the immense mineral wealth which Russia has at her disposal. The future of Russian metallurgy presents itself, however, under more promising auspices now that the important coal basin of the Donets has been discovered and has been begun to be worked. The Russian Government is also vigorously pushing forward the construction of railways, and the day appears to be approaching when Russia will not only meet her own requirements in the matter of iron, but will also have some iron to spare for exportation. This result will not be witnessed in one year, or even in ten years; but, having regard to the wealth of Russia in coal and ironstone, it is tolerably certain that when a complete network of Russian railways reduces distances and diminishes transport charges, Russian metallurgy will be able to hold its own without the dangerous, delusive, and unreliable support of high protective tariffs. This result is rendered all the more probable by the fact that scarcely a week now passes in which some new deposit of Russian ironstone or coal is not discovered.

At present the annual production of iron in Russia is estimated

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at 320,000 tons, so that there is great room for further progress. In 1874 the metallurgical establishments of the State in the Oural, in the Donetz district, in the west and east of Poland, and in Southern Russia produced 202,501 tons of pig, 8994 tons of rough iron, 1151 tons of steel, 8203 tons of war projectiles, 146 tons of steel for cannon, 241 tons of iron for cannon, 169 tons of tyres, locomotives to the aggregate weight of 177 tons, 46,695 sabres and bayonets, 5735 rifles, &c. All this is very well, but one cannot but be struck with the lamentable predominance of the military element even in Russian metallurgical industry—at any rate, when that industry is in the hands of the State. To give an idea of the wealth of Russian mineral deposits, we may state that the Goroblagodat district, in the Oural, produced, between 1813 and 1872, 1,290,322 tons of iron minerals. The extraction was effected with the greatest ease, considerable quantities of minerals cropping up upon the surface. As regards the richness of the minerals in iron, they could also sustain a comparison with the best qualities, judging from specimens exhibited at the Polytechnic at Moscow. A great question which presses for solution now in connection with Russian metallurgical industry is the substitution of coal for wood, and to attain this object more railways are indispensable. Among more or less important Russian works which have effected this revolution in their production may be mentioned the Bank of establishment in Poland, and that of Liasichansk in Southern Russia. This last establishment belongs to the State; it was founded in 1866 with the view of stimulating private enterprise among the coalowners of the Donetz basin. Since 1866 the New Russia Company and Mr. PASTOUKOFF have constructed several blast-furnaces, and in all these new establishments coal has wholly replaced wood. In several Russian localities coal has also been introduced for puddling purposes, and quite recently the Siemens puddling furnace has also been introduced. All this is interesting, but still it is clear that Russian metallurgical industry is comparatively in its infancy at present.

THE AGE OF STEEL.

With all due respect to our legal friends, we think there is no word in the English language which more deserves to share the obliterating fate which Lord Brougham gave to "cannot" and "impossible" than their favourite word "Precedent." To our mind "Precedent" bars the dreary drag which ever hinders the car of advancement; bars the barrier, we are sorry to say, which has ever to be encountered and pulled to pieces by the march of progress.

The restrictive regulations of the Board of Trade have for years retarded the advance of steel. At length the tottering timbers of "Precedent" belonging to the Board have given way with a crash before the persistent sledges of science, as wielded by the advocates of steel and the Committee of the British Association. It is, therefore, with no little degree of satisfaction that we have this day to record a victory on the side of enlightened science. The restrictions are now to be withdrawn, and steel is to be recognised as vastly superior to iron, and as an advancement of the age. It is now to be used for our boilers and bridges, our ships and our structures, with a frequency hitherto unknown, and with a result hitherto unparalleled. As if to inaugurate such an event the Lords of the Admiralty are at once come forward in a creditable way, and issued orders for half-a-dozen ships-of-war (corvettes), which are chiefly to be built of steel, so as to gain strength, durability, and lightness beyond anything which has gone before.

The construction of these ships has been entrusted to Messrs. John Elder and Co., one of the most eminent firms of engineers and ship-builders on the Clyde, who have undertaken to complete the order in two years. Many thousand tons of steel will be wanted for this order, and we understand that the production of it will not be confined to Scotland, but will give employment to other steel-producing centres, such as Sheffield, Bolton, Cumberland, and Lancashire.

For these events the whole engineering world is prepared—they have been long and anxiously looked for—they form a little epoch of themselves in the age of steel, and now many an eye stands gazing through the vista of the future, looking at the coming revolutions in engineering science before which shall fall the tottering fabrics of our younger days. The problem of conversion by fusion has been solved by those gentlemen of whom Mr. Bessemer may be regarded as the type; but there remains another problem intimately connected with it which more concerns ourselves that has now to be solved. To this problem we have on former occasions called the attention of our readers, and it is now attracting the attention of those likely to bring it to some practical issue. Up to the present time the essential element of conversion has been mainly imported into this country, and the importation, as all interested in the subject well know, is on the rapid increase. Are we to place dependence on other countries, remembering that but three years ago the Spanish war closed all our mines and left us wanting? Any day war may close our supplies, and, therefore, the all-important question of to-day relates to the ability and desirability of our obtaining all our raw material in our own country, and so be independent of our neighbours. We raise millions of tons of carbonates, hydrates, and hemisites; but it is only a small proportion of the latter which contains the manganeseiferous element so essential to the better irons and manufacture of steel. We have for some time been urging the opening of more manganeseiferous hematites, and we have pointed to the deposits which this country possesses, so as to reduce our imports or cause them to cease; and it is pleasing to learn that some little progress is being made in that direction; sets are being taken up, and preparations are in progress for the development of one or two undertakings of the kind, which we hope will result in producing material suited to the requirements of the age.

SCIENCE EXHIBITIONS.—List of candidates who have been successful in obtaining Royal exhibitions of 50/- per annum each for three years, and free admission to the course of instruction at the following institutions:—1. The Royal School of Mines, Jermyn-street, London; Walter Marsh, age 24, engineer, Southampton; William I. East, 18, mechanical engineer, Pentonville, London; W. M. Angas, 21, mechanical engineer, Bridgwater.—2. The Royal College of Science, Dublin; J. J. Eastick, 21, teacher, Bury; R. W. Lancaster, 20, assistant teacher, Kendal; George Sisson, 19, analytical chemist, Gateshead.

ST. WEALDEN EXPLORATION.—In a paper read before the British Association, Mr. H. Willott, of Brighton, says:—"It is the opinion of Mr. R. Godwin-Austen, Prof. Prestwich, the Rev. Mr. Bonney, &c., that the search for palæozoic rocks this side of the Channel should be sought, if at all, somewhere nearer the line of the North Downs. It is my own personal irresistible conviction that the theory of the presence of a ridge of palæozoic rocks north of the English Channel, but south of the Thames, and within 1500 ft. of the surface, is no longer tenable. If 'science' means 'knowledge,' the facts brought to light by the sub-Wealden boring must seriously modify our theoretic conclusions, right enough in themselves as possibilities in the absence of such knowledge as we now possess. This knowledge was the object sought for. The undertaking has been stigmatized in a marvellously unexpected manner by the confidence and magnificent contributions of true lovers of science, who have so nobly subscribed to this the first boring for purely scientific purposes ever attempted in England, and which was suggested as, and which will prove to be, a not unworthy memento of the visit of the British Association to Sussex in 1872."

COAL AND IRON IN THE UNITED STATES.—It is thought in some quarters that the disruption of a combination for the maintenance and regulation of the prices and movement of anthracite coal will be attended with beneficial results to the general commercial interests of the United States. The total production of anthracite coal in Pennsylvania to Aug. 12 this year amounted to 9,816,459 tons, against 10,606,830 tons in the corresponding period of 1875. The total production of bituminous coal in Pennsylvania to Aug. 12 this year amounted to 2,241,184 tons, against 2,214,679 tons in the corresponding period of 1875. The aggregate production of coal in Pennsylvania to Aug. 12 this year was thus—12,057,645 tons, against 12,821,509 tons in the corresponding period of 1875, showing a de-

crease of 763,866 tons this year. American iron rails are quoted at the works at \$42/- to \$45 per ton currency; old rails have brought at New York \$21 to \$22 per ton currency.

CARDIFF AND SWANSEA SMOKELESS STEAM COAL COMPANY.—By the confirmation at the meeting on Tuesday (the particulars of which appear in another column) of the important special resolutions passed last month, it is to be hoped that a termination has been put to the difference which has existed between the vendors and the company. According to all accounts, the company possesses an excellent property, and now that all parties are at peace it is to be hoped that the resources of the mine will be thoroughly developed.

NEWPORT ABERCARN BLACK VEIN STEAM COAL COMPANY.—We are informed that the underground manager has reported having reached another fine seam of coal, 3 ft. thick, of excellent quality, hard, and compact, with a good roof over it, at the depth of 317 yards, in No. 1 pit. This is known in the Old Abercarn Colliery as No. 4 seam.

COAL SUPERSEDED.—Scottish colliery proprietors who happened to be present at the British Association on Wednesday could not, of course, be expected to perceive ground for rejoicing in Dr. Andrews' anticipation of a time when the necessity for fuel will be almost at an end, beyond what they may have been able to feel as philosophers and enthusiasts for human welfare. It is true that it is only at the vague period of "some future day" that the President ventures to promise even as a possibility that the efforts of science to isolate by a cheap and available process the oxygen of the air for industrial purposes may be rewarded with success, and he has nothing meanwhile to suggest for a hygienic substitute but "horizontal flues of large dimensions, terminating in lofty chimneys on a hill side or distant plain." But the realisation of this glorious dream of the day when we may see, not merely at dawn on Westminster Bridge, but at all times when the sun shines upon our city,

"Ships, towers, domes, theatres, and temples lie
Open unto the fields and to the sky,
All bright and glittering in the smokeless air—"

really seems but little to expect in the presence of the scientific discoveries made since the famous first meeting of the Association in the venerable City of York, just 45 years ago. There is a sort of poetry in this prophecy which is certainly more consonant to the scientific mind than is imagined by those outsiders to whom "divine philosophy" seems only harsh and crabbed.

LABORATORY OF THE FRENCH SCHOOL OF MINES.—This institution, founded in 1845 for analysing gratuitously any substances required by manufacturers, ironmasters, mineowners, and others, made 767 analyses last year; the total number from the commencement to the end of 1875 being 23,571. The substances brought for analysis comprise fuels, alloys and metals, antimony and silver ores, ores of gold, lead and mercury, cobalt and nickel ores, tin, copper, and zinc ores, iron and manganese ores, iron and arsenical pyrites, limestone, clays, kaolins, earth and sand, sea and other salts, manures and phosphates, water and mineral waters.

REPORT FROM CORNWALL.

Sept. 7.—The event of the week in Cornwall has been the Exhibition of the Royal Cornwall Polytechnic Society, and the annual meeting, in conjunction therewith, of the Miners' Association, full reports of which are published in the Supplement to this day's Journal. Whatever may be the case in the outlook of mining elsewhere, there is much room for encouragement in the proceedings of those institutions. In the Exhibition of the Polytechnic Society some new arrangements and machinery for the conduct of mining operations were brought under the notice of the public, showing how well the association continues after the lapse of so many years to discharge its self-appointed duty. At the meeting of the Miners' Association some excellent practical papers were read, and a report presented of the class and educational work done, which shows that for the quality of that work it stands second to no similar association in the kingdom, while it is a matter for wonder how, with such small means—such miserably inadequate means, indeed—results so considerable and important can be produced. However, the reports of the proceedings of these societies will be found elsewhere, and all we have here to do is to comment upon some of the more salient features which these improvements present.

All the speakers in connection with the two meetings, with hardly an exception, looked to the improvement of our various mining processes in the direction of greater efficiency, and, therefore, of greater economy, as essentially needful at the present juncture; and attention was thus directed by Mr. Richard Taylor to the need of something more being done in regard to the steam-engine. There was a time when very great attention was paid not merely to the construction of the steam-engine, but to its working. The latter point has been much neglected of late, until, as Mr. Taylor said, many of the engines in the county are in a condition which is anything but creditable.

In this connection especial attention should be called to the very valuable improvement effected by Messrs. Tangye in the direct steam-pump by the adoption of the compound condensing principle on Cherry's patent. At last year's meeting of the Miners' Association there was a lively discussion as to the merits of different forms of pumping-engine, especially with regard to the consumption of coals. The Cornish pumping-engine unquestionably stands at the head of all for economical consumption; and the direct acting pumps, cheap and handy as they were, were shown to consume, by comparison in proportion to the work done, a very large amount of coal indeed—nearly four times as much as the engines of the Cornish type on the average. Now, without any alteration of the pumps, by applying the compound condensing principle to the actuating engine the consumption of coal has been reduced more than half, and the problem has been solved, therefore, of making this form of pump economical as well as efficient.

As to the question of ore dressing, that also has certainly made very remarkable advances. The ore dressing-floor of Mr. Green, of Aberystwith, is singularly compact and effective; and in the drum-dressing machine of Mr. Taylor—which, like the apparatus first named, will be found fully described elsewhere—we have a new form of apparatus altogether, from which very great things indeed may be expected. Then, in Messrs. Oxland and Lockett's calciner, which was brought before the Miners' Association, we have a machine which, with the exception of a light amount of attendance, is not only perfectly automatic, but burns without fuel the gases of the ore themselves, supplying all that is needed for complete combustion.

The boring machine question has advanced more than a stage. Messrs. Taylor, who have tried borers of various kinds in all parts of the world, are still engaged in prosecuting their costly experiments. Under the auspices of Mr. Bassett, and with the liberal concurrence of Capt. Teague, the percussion borer of Major Beaumont is to be tried at Carn Brea. But the most important point after all was the announcement of Capt. Josiah Thomas and Mr. Loam that at Dolcoath the Barrow borer is proved success. One way or another, therefore, the problem is solved.

And there is one other point of extreme satisfaction—the announcement by so high an authority as Mr. A. P. Vivian, M.P., that from what he observes he believes that the depression is commencing to wane. May it be so.

At the North Treskerby meeting, on Tuesday, a call of 2s. 6d. per share was made to meet present liabilities. There has been some talk of "knocking" the mine, but the idea, if ever seriously entertained, seems now to be abandoned. There is a lode in the mine, which, from its width and size, the manager declares to be unsurpassed in the county, and with a little additional capital and energy the property will soon be brought into a paying concern. It is confidently anticipated that even now it is in a position to pay costs.

At West Chiverton meeting, last week, a conversation ensued as to the jiggers in use at West Chiverton, which had been improved by Capt. Southey so as to save labour. Mr. Rule suggested that mine agents should inspect the floors there, and see if they could not introduce similar improvements. West Seton was far behind West

Chiverton in dressing appliances. Capt. Southey said better results were obtained from classifying the stuff as it came from the stamps or crusher than by throwing it all in pell-mell. He would be glad to see any mine agents coming on the mine to see the floors for themselves. As long as they could continue to make the same returns that they were now making, without encroaching on the reserves, he thought they would stand equal to any mine in the country. Their new machines were equal to six on the old principle, and when they were finished they should begin to reap the benefit of them. Two years ago there was barely work for one crusher. Capt. Thomas (agent for the Dynamite Company) said they had there the best crusher in the world. He advocated the use of dynamite, as a great saving would thereby be effected.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Sept. 7.—The Iron Trade remains without alteration, and were it not for colonial requirements the works would, indeed, be badly off. In the present depression it is not at all surprising that we should hear that the miners employed by the Blaenavon Iron Company have taken out their tools from the pits, a notice to terminate contracts having expired. It is also stated that a section of the ironworkers belonging to another large establishment have been put on the day-to-day system, but it is believed an arrangement will be made by the firemen and steelworkers to work on the long weight system, and in that case the day-to-day notice will be abandoned. It has been stated freely in the district that a large order for steel rails has been lodged with three local firms by the Great Western Railway Company. In the present day companies who are about to lay down new lines will hesitate very much before they use iron rails, the steel rail being, as I pointed out last week, that of the future; and in the present state of the market rails can be picked up at prices favourable to buyers. Tin-Plates are unaltered. It is only a few weeks ago that a strike occurred at the Vernon Tinworks, Briton Ferry, and as a reduction in the price paid per ton will be endeavoured shortly to be enforced, it is feared that another dispute will occur.

For coals the demand is steady, and up to recent averages; but prices are stationary, and not only are colliery proprietors suffering from the lowness of quotations, but shipowners as well as freights are at the lowest ebb, and many vessels are laying up. The output is considerable, although several pits are closed, and the quantities of coal sent for shipment are in excess of the demand. The general opinion is that the coal trade will not materially change until the iron industry shows an improvement. House coals are without alteration. The men employed at two of the collieries at Ystalyfera have brought out their tools, notice of a reduction in cutting prices having terminated. At another colliery at this place operations have again commenced, the men agreeing to accept a reduction. At several other collieries work has been entirely suspended, and notices given to determine contracts.

One of the largest colliery companies in the district is the London and South Wales Coal Company. They have works both in Glamorgan and Monmouthshire, and it is to these latter that allusion is about to be made. The company took possession of the Risca works in March, 1874, and they have since endeavoured to improve the concern. Two new shafts were commenced, and last week one of them was opened, the day's proceedings being marked by great rejoicings. The company will be enabled soon to send a much larger quantity of coal to Newport.

A deputation from the North of England in connection with the National Union of Miners is expected to visit this district soon, but the converts that will be made will undoubtedly be very few, as it is not now among many so much a question of wages as of obtaining employment.

The strike of a section of the men employed by the Taff Vale Company still continues, and the men show a most bitter feeling towards their employers. A meeting of working men has just been held at Cardiff to sympathise with the men employed, one of the resolutions passed being framed in a most hostile style towards the directors.

A most important and somewhat startling statement (if true) has been made by a man who was fined the other day by the Treherbert magistrates for opening a Davy lamp underground. He was engaged in the Abergorky Colliery, and he appears to have opened the lamp and re-lighted it with some matches he had with him. He subsequently told one of the officials of the colliery that he opened the lamp with a key which he had about him, suspended from his neck by a piece of string, thus escaping the vigilance of the lampman. But the worst of it is that he says he knows other men who use these keys; if this be true no wonder that explosions are caused, and the origin cannot afterwards be traced.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Aug. 7.—The Iron Trade of South Staffordshire and East Worcestershire is not in an improved condition upon the state of things at the date of our last report. The mills and forges are making no more time in any but those instances in which proprietors have concluded that it answered their purpose to take specifications for somewhat large quantities of mixed lots needed by local merchants, who are experiencing a steady improvement in demand on account of the necessities of hardware producers whose raw materials are mostly finished iron. Where this is not a characteristic of the current business firms who roll plates which secure a medium price have most to do, if we except those steel making concerns which for some months past have managed to keep going average time. For the mills at which common bars, with rods, strips, and hoops are rolled, orders are much sought after.

Prices are not improved upon the week; indeed, quotations have been mentioned to-day in Birmingham, as they were likewise in Wolverhampton yesterday, that indicate less strength in the class of prices hitherto deemed those appertaining to best known houses. By the blowing-in by Messrs. Philips and M'Ewart of their furnace near to Dudley the make of pig-iron is about to the level at which it stood a few weeks ago, before Earl Dudley and Messrs. Allen-brooke each blew out a furnace, since the furnace now blown in is in addition to other two small furnaces re-started when the two larger ones just mentioned were stopped; it is, however, likely that Messrs. Philips and M'Ewart's furnace will be employed in making cold-blast iron. Only few sales have this week been reported in native pigs, for which 4/- 5/- keeps the ruling price for all-mine samples of hot-blast. Proportionately, the enquiry is better for foundry than for forge samples.

The Coal Market in the iron-making localities has become unsettled by the action of the Cannock Chase colliery owners, who have advanced their house coal rates 1s. per ton. If following this lead the Earl of Dudley should advance furnace coal miners' wages will have to be raised in the older as well as in the newer localities, and all sorts of minerals mined in South Staffordshire must be put up in price at a time when it is extremely difficult to carry on the industry at a profit. At the moment manufacturers show a tendency to strengthen for iron-making and general manufacturing samples, and the domestic kinds are all stronger in sympathy with the declared rise in the district previously named.

Throughout North Staffordshire the pits are not in average employment, but there is a shade of improvement in the demand for coal, owing to the nearer approach of winter and a little better enquiry for pigs, for this better enquiry has checked a tendency before appearing towards a reduced make. Prices of pigs are still too low to encourage enterprise by the proprietors of blast-furnaces. Nor is it possible to sell less unsatisfactorily of the finished iron department, so far certainly as it relates to plates, in which the sharp competition from other districts reduces quotations to the minimum. Happily the business doing in bars is not wholly profitless, and for the smaller sections there is a slightly better enquiry upon the week.

CANNOCK AND WIMBLEBURY COLLERY.—The third annual meeting of shareholders was held, on Thursday, at the offices, Burlington Chambers, Birmingham.—Mr. John Avins in the chair. The report of the directors, showed an available balance of 23917. 8s. 10d. The directors recommend that 13917. 18s. 7d. should be carried to the redemption fund, and the remainder, 1499. 10s. 3d., carried to the next year's account. This balance was sufficient to permit a dividend of 3 per cent. for the past year, but the directors recommend that, instead of its being now distributed, power should be given to them to declare an interim dividend out of the profits of

the half-year ending Dec. 31 next, by which date, if their expectations of a winter trade were realised, they would be in a position to pay a more favourable dividend. —The Chairman, in moving the adoption of the report, spoke hopefully of the prospects of the company. He said that they were drawing from 1000 to 1500 tons of coal per week at the present time, and this month prices had gone up 1s. per ton.—Mr. Nunns seconded the motion, which was carried.—A resolution was passed empowering the directors to declare an interim dividend at Christmas; and the retiring directors—Messrs. Avina and Terry—were re-elected.

TRADE OF THE TYNE AND WEAR.

Sept. 5.—There is a great want of confidence here at present, owing to the heavy failures in the iron trade. Coke makers act with much caution, and in many cases refuse to book orders. They also generally decline contracts. The Steam Coal Trade continues good, but that is the only branch of the trade showing any life at present. The shipments at the various docks continue, especially for the Baltic. A good quantity of steam and gas coals is also sent to the Mediterranean. The coasting business is very dull.

About fifty members of the Institute of Colliery Engineers for Northumberland and Durham had an excursion on Wednesday to Sunderland and district. The party met at Monkwearmouth Colliery, where they were received by Mr. Parrington. Having inspected some of the machinery and partaken of the refreshments provided by the owners of the colliery, they drove to Silksworth, where Mr. Parton received them. A few of the members went down the pit. From Silksworth the party drove on to Ryhope, where upwards of 20 members went down the pit and inspected the air-compressing machinery in use in this colliery. Mr. Hall provided luncheon for the members at the Wellington Hotel, Ryhope. Mr. Hill presided, and Mr. W. Moore, of Hetton, was in the vice-chair. During the evening Mr. Gibson read a paper on "Air-Compressing Machinery in Use at Ryhope Colliery." The engine at bank was a double 32-in. steam cylinder, and 33 ft. air cylinder; steam pressure 30 lbs., and air pressure at bank 45 lbs., with a 5 ft. stroke. The air was taken from a receiver at the bank 30 ft. long and 6 ft. in diameter, and carried in 9-in. pipes of malleable iron three-eighths of an inch thick and 10 ft. long, to a receiver fixed at the bottom of the shaft in an iron buntions. This receiver was 12 ft. long and 4 ft. in diameter; 8-in. pipes were taken from the receiver to another receiver at the top of the engine bank. Mr. Gibson further described the machinery in use, and stated the amount hauled by the engines. At the engines south a quantity of frost-rime is found in the cylinders and bed-plates. At the west engine the cylinder and bed-plates were damp. Much had been said about the loss from leakage. At Ryhope they found that when the engine stopped at eleven o'clock at night with 30 lbs. pressure in the receiver, there was from 10 lbs. to 15 lbs. in the receiver in the morning at five o'clock, proving that the joints of the pipes, receiver, and valves, were all tight. Objections had been urged against the use of compressed air; first, on the ground of loss by leakage; second, the expense of machinery; and third, small percentage of useful effect obtained from the power expended. Expense had effectually disposed of the object of loss by leakage, and the writer had no doubt that good material, workmanship, and arrangements would overcome the other objections. At the Ryhope Colliery there are two shafts, both sunk to the Hutton seam, a depth of nearly 300 fms. One shaft is 16½ ft. in diameter clear, and the other is 14 ft. clear. The remarkable work to be seen here is the air-compressing machinery already described, which has been carried out to a great extent; the air is compressed by steam-engines on the surface and conveyed underground by pipes, and at present four hauling engines are driven by it underground, those engines having, to a great extent, superseded the use of horses. The members of the Institute had another excursion yesterday to the Hetton Collieries. The greatest point of interest there will be, no doubt, the coal-cutting machines, four of which are worked at present. The seam in which they are worked is a very hard coal, and it was scarcely possible to work it at all by hand labour. An account of this excursion will be given next week.

The Cleveland Ironmasters' Association's monthly statement states that the total number of furnaces blowing during the past month was 112, against 113 in the same month last year; number out, 48, against 43 last year. The make of pig-iron in the district had been 171,308 tons, against 166,241 in August last year; shipments, foreign, of pig-iron from Middlesbrough, 28,215 tons, against 31,013 last year; shipments coastwise, 33,112 tons, against 26,301.

There was an average gathering on "Change" at Middlesbrough, but there was a lack of animation, business being chiefly confined to the current wants, the late failures having damped all speculative spirit. It is now announced that petitions have been filed by the Lackenby Iron Company and Swan, Coates, and Co., in addition to that of Thomas Vaughan and Co., and another firm is mentioned. In regard to these complications, with others in the district, hopes are generally expressed that the creditors will exercise as much patience as possible, or a forced sale will not be half the value of the respective properties. There are, no doubt, great difficulties to be encountered in any satisfactory arrangement being come to, but they are not insuperable. The quotations for pig-iron are pretty firmly maintained. There is not a large enquiry at the present time. The shipments are fairly sustained. The general prices are—No. 1, 42s. to 49s. 6d.; No. 3, 45s. 6d. to 48s. No. 4, 48s. 6d. to 42s. The business done, however, is so small as to scarcely enable it to be fixed with certainty. The finished iron trade is not improved. There is not much demand, but there have of late been a few enquiries floating about, though whether they are anything more than feelings remains to be seen. The rates of manufactured iron do not differ from those lately given. There are no hopes that a demand will spring up for iron rails as the winter approaches. The plate trade is for the present fairly occupied, but it is doubtful if the lower prices will do much more than enable manufacturers to make their own. Coal and coke unaltered.

REPORT FROM LANCASHIRE AND CHESHIRE.

Sept. 7.—The position of the coal and iron trade remains practically unaltered. In the former the approach of colder weather has given a slight incentive to some of the departments, but this has not been sufficient to cause any change in prices, and the supply is still far above the demand. Even the slight improvement that has taken place has been limited to the superior sorts of house coal; inferior qualities are still a drug in the market. In the iron trade there is much competition for orders, and it is almost impossible to obtain reliable quotations. To the mining portion of the district the chief events of the week have been two important prosecutions for breaches of the Mines Regulation Act. The first was at the Bolton County Police Court, on Monday, when Mr. Thomas Smith, manager to Messrs. Thomas Fletcher and Sons, of the Outwood Collieries, was charged with a breach of the 40th special rule, providing for the safe "sprigging and propping of working-places." The prosecution was conducted by Mr. Holden, solicitor, who appeared for Mr. Dickinson, H. M. Inspector of Mines. Mr. Maskell Peace had been retained for the defence, but he was unable to be present, and an application that the case must be adjourned for his attendance was opposed on behalf of the Inspector. The magistrate decided that Mr. Dickinson's convenience should be consulted, and refused the application. The case was the first of the kind in the district, and arose out of an accident which took place at the collieries, of which defendant is manager, on August 6, when a collier was killed by a fall of roof. In the opinion of the Inspector this might have been prevented by proper sprigging and propping. Mr. Dickinson spoke of the defendant in very high terms, and said that in this case the error had been want of firmness in insisting upon the special rules being carried out. It was not denied that the necessary material was at hand if the deceased had chosen to use it. The magistrates inflicted a penalty of 10s. with costs. The second case was heard this (Thursday) morning at the County Police Court, Bury. Mr. Emanuel Defty was summoned at the instance of Mr. Dickinson for breaches of the first and seventh general rules. The case first heard was that relating to the seventh rule, which forbids the use of naked lights in workings approaching known accumulations of gas. Mr. Holden again appeared for the Inspector, and stated that on Nov. 9 last a party of three men were seated at breakfast, having just previously fired a shot, when an explosion took place, the gas being ignited by the naked light the workmen had with them. All three subsequently died. It was not alleged that the gas came from old workings adjacent, but it was contended that these were so near that the rule had been violated. Mr. Crossland, who appeared for the defendant, pleaded guilty to the charge, but urged in mitigation that the defendant had done all in his power by providing and posting special rules to prevent disasters of this kind; and that the defendant was newly appointed to his post, and might not have accomplished all the needful repairs previous to the accident. A penalty of 10s. was inflicted. In the second case the summons was withdrawn.

The week has been prolific of casualties. In one case a collier took with him into some old workings a naked light, and caused an explosion. The injuries resulted fatally. In another, two men employed at a Varnworth colliery were buried by a fall of roof; one was extricated alive, the other dead. In a third case the Tong Colliery, which for 12 years has escaped explosions, was the scene of a very serious one, fortunately without loss of life.

The Pearson and Knowles Coal and Iron Company, Warrington and Wigan, have issued their third annual report. The business of the company during the past year has been carried on under circum-

stances of great commercial depression, and in a continually falling market the balance of profit for the year, including 1731L brought from the last account, is 57,852L, and of this sum 18,777L was paid as an interim dividend for the half-year ending December 31 last, and the directors now recommend that a dividend, free of income tax, at the rate of 6 per cent. per annum, be paid in shares for the past half-year. This will absorb 24,000L, and will leave a balance of 14,75L, which the directors recommend should be carried to the reserve fund, raising the fund to 3,917,592L. The company possesses property worth 756,247L 7s., with 93,992L 14s. 6d. of stock in hand, and there is due to the company nearly 7000L. The directors include Mr. Knowles, M. P. for Wigan, Mr. Rylands, M. P. for Burnley; and the company is in a most flourishing condition.

REPORT FROM THE FOREST OF DEAN.

Sept. 7.—The improvement in trade and labour reported in our last scarcely maintains itself, notwithstanding that autumnal weather seems setting in; but a little improvement is better than none at all. The Severn and Wye system of railway service has been extended three-quarters of a mile nearer Cinderford than heretofore beginning on the 1st inst.; but, without the changes indicated in former reports, or some of them, the company will never get a firm hold of the population on the eastern side of the Forest. The meeting on the water supply for Cinderford was small, but influentially attended, and ended in the understanding that the inspector would recommend the grant of the loan asked for—5600L—which, for a population of 6000, is less than 1L a head. It was considered, however, that it would be better to alter the scheme so far as to admit Drybrook, Nailbridge, and Steam Mill, and the engineers accordingly had instructions for the necessary modifications. This alteration will add an additional thousand of population or more. Yesterday a fine seam of coal was struck at Hawkwell Colliery, after sinking about 190 yards. The event was celebrated by hoisting a white flag on the top of the engine-house and firing off guns, which roused up and startled the surrounding population.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 7.—There has been but little change in the state of trade during the week; and although more has been done at some places in house coal, yet prices remain without alteration. The London merchants have been able to force up prices 1s. per ton, but this is in no way warranted by any extra charge made at the pits, or difficulty in obtaining supplies, for many collieries are now working only four days a week. There has been a falling off in the tonnage sent by the Midland to the metropolis during the last month, which plainly shows that a much larger quantity might have been sent were it required, so that the advance is an advantage taken by merchants, owing to the time of year having arrived when it has been usual for a change to be made. The tonnage sent from Clay Cross has been at the rate of rather more than 5000 tons a week, a slight improvement on July, but not equal what was formerly the average. From Langley Mill there was a decline during last month in the quantity sent to the London market, the total being little more than 15,000 tons. Fully an average tonnage has been forwarded from Staveley and Sheepbridge by the various lines, whilst at the pits on the Erewash Valley business has been tolerably fair. At Newstead, which is in Notts, the men are busily engaged in driving out, and are sending a small quantity of coal by railway. The Sleaford Colliery may now be looked upon as having thoroughly collapsed, and the money subscribed by the miners entirely lost. At some of the ironworks business keeps up very well; but at none does there appear to be anything like activity. The make of pig is not equal to what it has been, and fresh markets have had to be sought for. A good deal of Northamptonshire ore is brought to several of the works, but it is from places that have been leased direct by our own ironmakers, so that they are doing comparatively little with parties in Wellington and, other places on whom they formerly depended for larger supplies. For some descriptions of foundry materials there is a fair enquiry, whilst in other places is not so much doing.

The state of Sheffield is very much as it has been for some time, many hands being on something like half-time, and the are but slight chances of any marked improvement taking place during the remainder of the year. Some few branches have been doing very well, the principal being those engaged in the rolling of heavy plates and the production of munitions of war and Bessemer material. The makers of the former have had a rather long spell of activity, and most likely will continue to maintain it. There is, however, scarcely so much doing in Bessemer rails as there was a short time since, but there is no doubt but what the demand will increase more than otherwise. For forgings of the same material there is more doing, whilst there has also been some improvement with respect to cast-steel girders. Taking all the cutlery branches together they are very dull, and great many of the hands are walking about nearly half their time. That malleable material is superseding steel in the production of many articles, not only owing to its being considerably cheaper, but being fully equal, and in some instances superior, to the steel, is a fact of which there is now no doubt. The firm of Crowley and Son have been turning out a variety of articles that for tenacity, sharpness, and fitness of finish are equal to any made of steel. The high reputation of the firm, now the first in the trade, has ensured for it a large amount of work in specialties that were formerly manufactured in steel. The founders have been doing a steady business in tubing, pipes, and fittings, whilst the extensive business operations going on have increased the demand for stoves, grates, and general house fittings. Boiler-makers do not appear to be quite so busy as they have been, and the same remark applies to wagon-builders. In South Yorkshire the coal trade has but very slightly improved of late, and coals can be bought at very low rates, especially household qualities. The active season for steam coal is drawing near; but our shipments have kept up very well from the Humber ports to the North of Europe. Colliery owners, however, to maintain their position in some of the foreign markets, have been obliged to sell at prices that have left no profit, owing to the competition on the part of the local proprietors.

Mr. David Moulson, president of the South Yorkshire Miners' Association, and treasurer of the Miners' National Union, writing to the Warwickshire colliers on the subject of the secession of a great number of them from the National Union, says:—"At this time, when we are passing through a period of great commercial depression, and when the question of capital and labour is occupying so much attention, it is of the utmost importance that working men should be firmly united. If they are disorganised disaster will follow fast upon disaster, and no one but the men themselves will be to blame."

THE SUDDEN OUTBURST OF GAS AT THE OAKS COLLIERY, NEAR BARNESLEY.—The sudden outbursts of gas that have on several occasions taken place in South Yorkshire in collieries working the Barnsley and Silkestone seams have led to a minute examination being made with a view to ascertain their extent, and providing the best means to prevent them from doing injury to the workpeople or the mine. At the Stafford Main Colliery, where the Silkestone is being worked, several cuttings have taken place. The last one came from the strata and floor underneath, when four men were stricken with the gas, whilst several others felt a rush of air and dust, and had their lamps extinguished by fire-damp, with a current of air of 12,000 ft., and at a velocity of 350 ft. per minute. When several trammers were at work, with a current of 17,000 ft. per minute, and upwards of 5 ft. per minute velocity, the lamps fired and then went out. A bore hole was made 2½ inches in diameter, and a 1½ in. gas pipe put down and rammed tight to the sides, when the floor is not less than 11 in. in depth was rent, and it remained not less than 30 lbs. per square inch to do it. The gas was heard by steam blowing off, and when it had subsided, and the manager could go to it, it registered 50 feet per minute on a 6-in. Byram's anerometer. With respect to the outburst which took place at the Oaks Colliery last week some interesting particulars have been given. In the first place it may be said that had it not been for the excellent state of the safety-lamps, most serious disaster would have taken place. The gas, it appears, was almost off from both the roof and the floor, the latter being so much unseated as to almost reach the falling roof. Some of the men had been engaged in removing wool from the place which had been previously examined by no less than six different persons the same morning. However, about noon the roof commenced to "weigh" in what is known as Birk's level, about 521 yards from the pit bottom. Those in charge treated the roof in a similar manner to what they had been in the habit of doing under the same circumstances at the Oaks and elsewhere. A heavy fall, accompanied by the upheaving of the roof, then took place, and the result was that a large quantity of gas was liberated, which was carried off by the return air current.

The result of the fall and the upheaval was to cause the timber, stones, and dirt to be thrown about in all directions. On the gas coming in contact with the lamps they were at once extinguished, so that the men had to find their way to the bottom of the drawing shaft as well as they could. At the time of the occurrence upwards of 10,000 cubic feet of air per minute was crossing the coal face. At 337 yards from the bottom of the pit the current of air was 15,000 ft. more, whilst at 417 yards 40,000 cubic feet more were passing. At 507 yards distance there was an addition of 75,570 cubic feet of air per minute passing along, so that through the whole of the districts there would be something like 14,000 cubic feet of air per minute passing along the workings. At 592 yards from the bottom of the pit the first lamp—a Stephen—was extinguished, the gas at this point being seen in the lamps for nearly five minutes. The gas then gradually fell back, so that by seven o'clock in the evening the banks could be reached with safety by way of the return air courses. Mr. F. N. Wardell, her Majesty's Inspector of Mines for Yorkshire, together with Mr. Mammat, the consulting engineer, and Mr. G. Wilson, the managing director of Cammell and Co., Limited, (to whom the colliery belongs), were telegraphed for, and shortly after arrived. A consultation then took place and an agreement was come to as to the course to be pursued. The instructions were carried out, and the colliery was made all right again. The sudden outburst of gas, unattended by injury to anyone, shows the great necessity in all such mines of having not only the best safety-lamps, but also having them perfect in every way, for a defective one at the Oaks the other day might have led to a serious loss of life.

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The East Tresavean grant is about 400 fms. from east to west on the course of the lodes, and 300 fms. in width, affording scope

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AUCTION, by order of the Mortgagor (unless previously disposed of by
Private Contract), at the Turk's Head Hotel, Grey-street, Newcastle-upon-Tyne,
on Tuesday, the 12th day of September, 1876, at Three o'clock in the afternoon
precisely, the undermentioned.

LAND SALE COLLIERIES AND LIMESTONES,
Situated in the parishes of LOWICK and DODDINGTON, in the county of
NORTHUMBERLAND, with all the RIGHTS and PRIVILEGES of the lessee
so far as these relate to the MINERALS on the several estates.

BARMOOR COLLIERIES,
This current-going colliery is situated on the Barrow Estate, about 1½ mile
west of the village of Lowick, and is held under an indenture of lease from Francis
Sutcliffe, Esq., for a term of 31 years, from the 11th November, 1862, the said lease
embracing the entire mineral property of the Barrow Estate, with certain well-
defined exceptions. The present winning was made in the year 1872, and the coal
has been profitably worked to the present time. Two seams of coal underlie the
estate—the Black Hill Seam, got at a depth of 24 fms., and the Bulman Main Seam
at a depth of 32 fathoms. The latter only is worked at present.

The produce is an excellent house coal, for which there is a ready and increasing
sale at highly remunerative prices. A recent estimate by one of the best autho-
rities in the district makes the area of coal in the Bulman Main Seam alone, pro-
bable from the present winning, 62 acres, equal to 157,500 tons. The colliery
is in perfect working order, and the absence of competition in this neighbour-
hood prevents the fluctuations in price which are common in other districts.

THE LIMESTONE QUARRIES, SEAMS, AND STRATA,
On the above-named Barrow Estate, with certain limitations, with the usual
powers for working the same, held under the same indenture of lease as the coal.
These works, known as the Dryburn Limeworks, are not at present being carried
on, but may with a very moderate expenditure be resumed. The stone is abundant
of excellent quality, and near the surface, while the outcrop coal on the estate forms
excellent fuel for the kilns. The demand for lime in the district is largely in ex-
cess of the supply. The kilns now erected are estimated to be equal to a product
of 150 tons of lime weekly, which could all be readily sold at profitable rates.

THE DODDINGTON COLLIERIES,
Held under an agreement from the Right Hon. the Earl of Tankerville for 31 years
from 11th November, 1862, which secures to the lessee the exclusive right of work-
ing coal on the Doddington Estate of about 3000 acres, adjoining the Barrow
Estate. Coal is not at present being worked on this estate, but it is beyond doubt
that it can be won at a small cost, and profitably disposed of.

THE LIMESTONE QUARRY AND KILN,
Known as Northfield Limeworks, situated in the parish of, and about ½ mile dis-
tant from, Lowick, held under lease from Richard Steward for a term of 21 years,
from the 12th May, 1870. The stone has been worked up to the present season,
and operations may be resumed at any time, the plant and roads being in working
order.

The whole of the above will be offered in One Lot, and if unsold then in such
other lots as may be determined at the time of sale.

For particulars and conditions of sale, and further information, and to inspect
the various collieries and works, apply to Messrs. G. S. and H. BRANDON, Solicitors,
15, Essex-street, Strand, London; to Messrs. T. Y. STRACHAN, ORMOND, and
TAYLOR, Public Accountants, Grainger-street, West, Newcastle on Tyne; or to the
Auctioneers, Pilgrim-street, Newcastle-on-Tyne.

BRYN ROYALTY MINE, ROCHE.

VALUABLE MINE ENGINE AND MATERIALS FOR SALE.

M. THOMAS KINSMAN is instructed TO SELL, BY PUBLIC
AUCTION, on Wednesday, the 13th day of September, 1876, at Eleven
o'clock A.M., on the Mine, in One Lot or otherwise, as may be agreed on at the
time of sale, the WHOLE of the

MACHINERY AND MATERIALS

On BRYN ROYALTY MINE, in the parish of ROCHE, comprising—

ONE 30 in. cylinder ROTARY ENGINE, of 10 ft. stroke, double action, two fly-
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to the road, with 48 heads of stamps, all complete; tin house, 70 ft. by 8 ft.;
bubbles, rakes, tyrs, and floors; and about 10 tons of bridge rails; a large quantity
of wooden laundry, smiths' tools; tram wagons; wheelbarrows; and a variety
of other articles and materials in general use on a mine.

The purchaser of the engine may treat for the purchase of the lease or sett of the
above mine, granted by Viscount Falmouth for a term of 21 years, from the 1st
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For viewing the machinery and materials, apply to Capt. STEPHEN SYMONDS,
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and STEPHENS, Solicitors, St. Austell.

Dated St. Austell, August 24th, 1876.

VALUABLE COLLIERY AT SHEFFIELD.

TO BE OFFERED FOR SALE, BY AUCTION,

BY MR. JOSEPH NICHOLSON, at his Mart in High street, Sheffield,
on Tuesday the 26th day of September, 1876, at Four o'clock in the afternoon, the
COLLIERY known as

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Situate at BRIGHTSIDE, in the parish of SHEFFIELD. The property is partly
FREEHOLD and partly LEASEHOLD. The leasehold part is held under several
leases, the particulars whereof can be obtained on application.

The coal remaining to be worked consists of about 190 acres of the Silkstone Bed and
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There are 22 coke ovens on the premises, capable of producing a considerable
quantity of coke, for which there is a great demand at the large manufacturing
works in the immediate neighbourhood.

The colliery is provided with ample machinery, and adjoins the line of the Mid-
land Railway from Sheffield to Rotherham and Mabro', and is connected there-
with by sidings.

The fixed machinery (a schedule of which will be produced at the auction) will
be included in the sale.

The purchaser will be required to take the horses, plant, loose tools, and effects
at a valuation.

The working plans of the colliery may be inspected at the office of Mr. J. W.
JEFFCOCK, Mining Engineer, Bank-street, Sheffield.

Further particulars, with conditions, may be obtained on application to Mr. J.
W. JEFFCOCK; the Auctioneer, High-street, Sheffield; or to Messrs. BROOMHEAD,
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For plans and particulars, apply to WALTER EDDY, Esq., Llangoed; and to
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As the same was recently worked by WORDSWORTH HARRISON, Esq., J.P., toge-
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ONE STEAM BOILER with fittings, 500 feet of steam piping, 2 winding gins,
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The Mine has been thoroughly proved, and a steady output may, it is believed,
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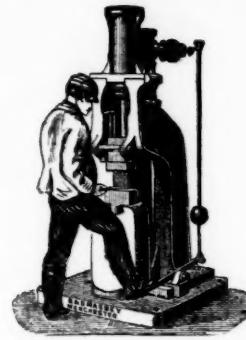
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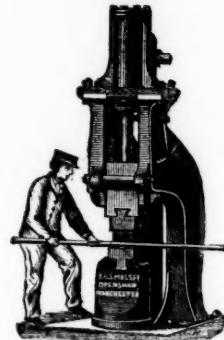
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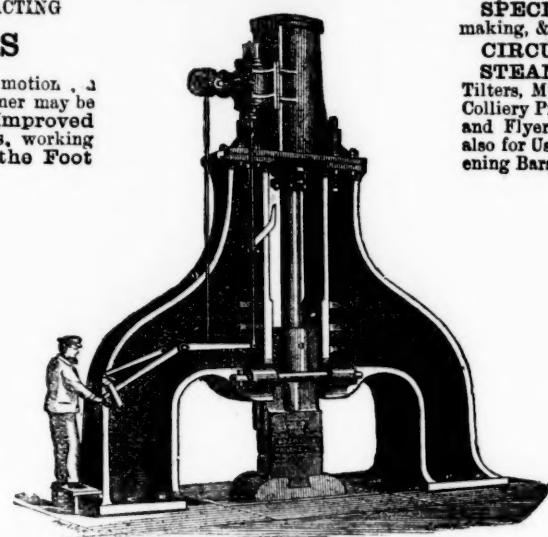
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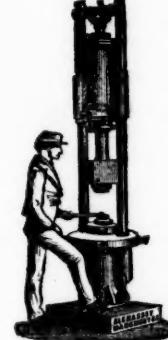
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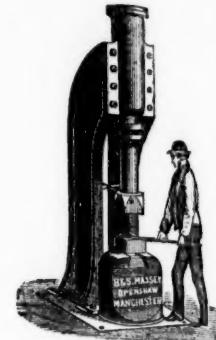
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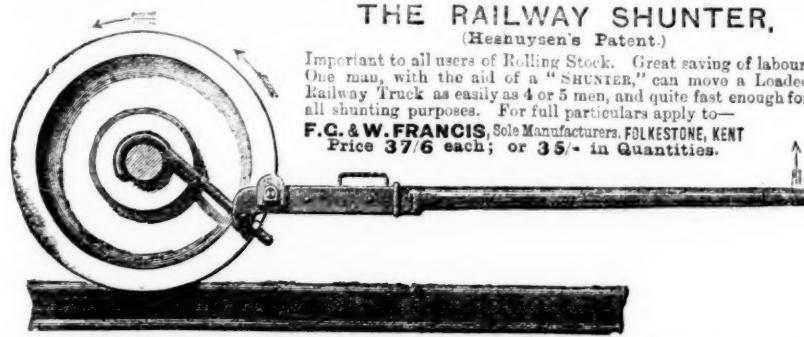
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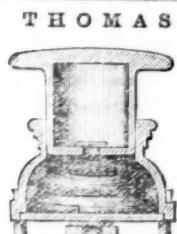
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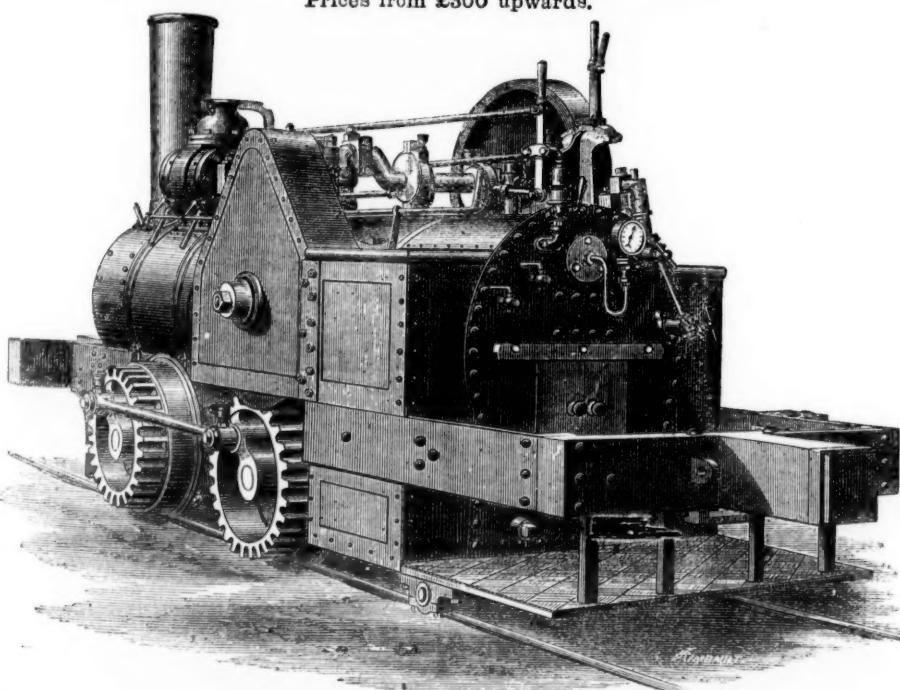
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BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. Pr.	Total divs.	Per share.	Last paid
15,000 Alderley Edge, c, Cheshire	10 0 0	—	—	—	12 11 8	0 2 6	Jan. 1876
15,000 Balmynheer, t, Wendron (4000 to ls.)	1 0 0	—	—	—	0 2 0	0 2 0	Nov. 1875
30,000 Bampfylde, c, t, m.s., Devon	1 0 0	15%	13% 15%	—	0 2 0	0 2 0	June 1873
200 Bettalack, t, c, St. Just	119 5 0	45	40 45	619 15	0 5 0	0 2 0	June 1873
4,000 Brookwood, t, Buckfastleigh	1 16 0	2	1% 2	8 16 0	0 2 0	0 2 0	Aug. 1872
3342 Cargoil, s-i, Newlyn	6 6 0	3% 3	3 3% 3	4 16 2	0 2 0	0 2 0	Oct. 1872
6,400 Cashwell, t, Cumberland	2 10 0	—	—	1 7 6	0 2 0	0 2 0	Aug. 1872
1,000 Carn Brea, t, Illogan	35 0 0	—	—	11 17 0	0 1 0	0 1 0	Feb. 1874
6,000 Cath, & Jane, t, Penrhynedraeth	5 0 0	—	—	0 7 5	0 1 0	0 1 0	June 1873
2,450 Cook's Kitchen, t, Illogan	22 17 3	2%	2 2%	11 17 0	0 1 0	0 1 0	Feb. 1874
10,240 Devon Gt. Consols, c, Tavistock	1 0 0	2%	2 2%	116 10 0	0 12 0	0 12 0	May 1872
4,298 Dolcoath, t, c, Camborne	10 14 10	34	32 34	10 6 0	0 7 6	0 7 6	Aug. 1876
6,500 Drake Walls, t, c, Calstock	6 0 0	—	—	0 2 0	0 2 0	0 2 0	July 1874
13,000 Duchess of Westminster, t, Holywell	1 0 0	—	—	0 3 0	0 2 0	0 2 0	Feb. 1876
10,000 East Balleswidden, t, Sancreed	1 0 0	—	—	0 2 11	0 5 0	0 5 0	Feb. 1874
6,144 East Caradon, c, St. Cleer	2 14 6	—	—	14 19 0	0 2 0	0 2 0	Oct. 1872
800 East Darren, t, Cardiganshire	32 0 0	—	—	255 10 0	0 1 0	0 1 0	Aug. 1876
6,400 East Pool, t, Illogan	0 9 9	12	12 13	14 14 2	0 2 0	0 2 0	July 1876
1900 East Wheal Lovell, t, Wendron	6 19 0	8	9 8	20 7 5	0 7 6	0 7 6	Oct. 1874
2,800 Foxdale, t, Isle of Man	25 0 0	—	—	82 5 0	0 10 0	0 10 0	Feb. 1876
4,000 Glasgow Carr., c, (30,000 £1 p., 10,000 1s.p.)	134	1 134	0 11 10 0	2 0 0	0 1 0	0 1 0	Jan. 1876
15,000 Great Dylife, t, Montgomeryshire	4 0 0	—	—	0 2 6	0 2 6	0 2 6	Apr. 1876
15,000 Great Laxey, t, Isle of Man	4 0 0	19	18 19	20 3 0	0 10 0	0 10 0	July 1876
615 Great Relatwick, t, b, Perranzabuloe	5 18 6	15%	1 15%	0 1 6 0	0 1 6	0 1 6	May 1875
2,000 Great West Van, t, Cardigan	2 0 0	—	—	0 2 0	0 1 0	0 1 0	Aug. 1874
5,908 Great Wheal Vor, t, Helston	41 12 6	3%	3 3%	15 19 6	0 2 6	0 2 6	June 1872
6,400 Green Huth, t, Durham	0 6 0	—	—	1 12 0	0 4 0	0 4 0	Oct. 1874
2,000 Grogwinion, t, Cardigan	2 0 0	—	—	0 8 0	0 2 6	0 2 6	Sept. 1876
9,830 Gunnislake (Clitters), t, c	5 5 0	2%	2 2%	0 12 9	0 2 0	0 2 0	June 1876
1024 Herdscot, t, near Liskeard	8 10 0	4	3 3%	62 5 0	0 15 0	0 15 0	Oct. 1872
18,000 Hindston Down, c, Calstock	2 5 0	—	—	4 4 0	0 1 0	0 1 0	Nov. 1873
25,000 Killaloe, s, Tipperary	1 0 0	—	—	0 3 11 0	0 6 0	0 6 0	Mar. 1873
40,000 Llibur, t, Cardiganshire	18 15 0	62	65 70	576 10 0	0 2 0	0 2 0	Aug. 1876
14,000 Llanidloes, t, Montgomery	3 0 0	—	—	0 1 6 0	0 1 6	0 1 6	Nov. 1873
6,120 Lovell, t, Wendron	0 10 0	—	—	0 17 6	0 1 6	0 1 6	Jan. 1874
9,000 Marke Valley, c, Cardigan	5 0 6	—	—	7 15 0	0 2 0	0 2 0	Jan. 1876
11,000 Melinlud Valley, t, Cardigan	3 0 0	—	—	0 7 2	0 8 0	0 8 0	Jan. 1875
9,000 Miners Mining Co., t, Wrexham	5 0 0	22	20 22	65 6 2	0 10 0	0 10 0	Aug. 1876
2,000 Mining Co. of Ireland, c, d, e	7 0 0	5%	5 5%	23 11 6	0 10 0	0 10 0	Dec. 1876
6,12 North Busy, c, Chacewater	2 10 0	—	—	1 2 6	0 2 6	0 2 6	Nov. 1875
12,000 North Hendre, t, Wales	12 2 0	—	—	4 12 0	0 12 0	0 12 0	Sept. 1873
2,000 North Levant, t, c, St. Just	12 2 0	—	—	0 9 0	0 9 0	0 9 0	Feb. 1874
27,855 Old Treburred, s-i, ordinary shares	1 0 0	—	—	0 1 4 0	0 6 0	0 6 0	July 1874
2,625 Old Treburred, s-i, 10 per cent. pref. pd.)	10 0 0	—	—	0 1 4 0	0 6 0	0 6 0	July 1874
5,000 Penhalls, t, St. Agnes	3 0 0	—	—	0 2 8	0 2 8	0 2 8	Nov. 1875
45,793 Penfrothral, t, c, Gwennap	2 0 0	—	—	0 2 8	0 2 8	0 2 8	Nov. 1875
12,300 Phoenix, & W. Phoenix, t, c, Link	3 4 9	—	—	0 2 6	0 4 0	0 4 0	Nov. 1875
15,000 Prince Patrick, t, Holywell	1 0 0	—	—	0 14 0	0 1 0	0 1 0	Jan. 1876
11,200 Providence, t, Lelant	18 6 7	2%	3 2%	104 12 6	0 10 0	0 10 0	May 1876
12,000 Roman Gravels, t, Salop	1 0 0	—	—	6 4 6	0 8 6	0 8 6	May 1876
512 South Caradon, t, St. Cleer	1 5 0	—	—	1 19 0	0 4 0	0 4 0	July 1876
612 South Condurrow, t, c, Camborne	6 5 6	—	—	18 6 0	0 10 0	0 10 0	Aug. 1876
10,000 So. Fr. Patrick, s-i, (8000 sh. issued)	1 0 0	—	—	0 7 0	0 1 0	0 1 0	Oct. 1875
12,000 Tankerville, t, Salop	6 0 0	—	—	10 12 0	0 5 0	0 5 0	Aug. 1876
6,000 Tincroft, t, Pool Illogan	9 0 0	—	—	49 13 6	0 5 0	0 5 0	Aug. 1876
15,000 Van, t, Llanidloes	4 5 0	—	—	38 56	0 16 0	0 16 0	June 1876
8,000 W. Chiverton, t, Perranzabuloe	12 10 0	—	—	54 10 0	0 10 0	0 10 0	Aug. 1876
1788 West Polidice, St. Day	10 0 0	—	—	11 13	0 4 0	0 4 0	July 1876
512 West Toliogus, t, Redruth	95 10 0	—	—	55 62% 55	0 15 0	0 15 0	Aug. 1876
2045 West Wheal Frances, t, Illogan	27 13 9	5	4 4%	3 12 6	0 5 0	0 5 0	Oct. 1872
512 West Wye Valley, t, Montgomery	3 0 0	4	3 2%	0 3 0	0 3 0	0 3 0	May 1875
512 Wheal Bassett, t, Illogan	12 2 6	12	10 12	633 10 0	1 10 0	1 10 0	Aug. 1872
1024 Wheal Eliza Consols, t, St. Austell	20 0 0	—	—	6 0 0	0 3 0	0 3 0	Aug. 1876
4245 Wheal Kitty, t, St. Agnes	2 13 10	1%	1 13%	11 19 6	0 2 0	0 2 0	Dec. 1874
80 Wheal Owles, t, St. Just	8 4 6	2%	2 2%	0 5 0	0 5 0	0 5 0	Dec. 1876
4000 Wheal Prussia, t, Redruth	2 0 0	—	—	0 3 0	0 2 0	0 2 0	Dec. 1876
25000 Wicklow, c, s-i, Wicklow	2 10 0	2	1% 2	52 9 0	0 2 6	0 2 6	Mar. 1872
10,000 Wye Valley, t, Montgomery	3 0 0	7	6 3% 7	0 6 0	0 3 0	0 3 0	Aug. 1875

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Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
85,500 Alamillos, t, Spain	2 0 0	2%	2 2%	1 14 9	0 2 6
8,000 Almada and Trifio Consol., s-i	1 0 0	—	—	0 6 3	0 1 0
20,000 Australian, c, South Australiat	7 7 6	2%	2 2%	0 18 0	0 8 0
10,000 Battle Mountain, c, (8240 part pd.)	5 0 0	—	—	0 10 0	0 10 0
15,000 Birdseye Creek, g, Cornwall	4 0 0	—	—	0 14 0	0 2 8
12,250 Burra Burra, c, So. Australia	5 0 0	—	—	70 0	0 10 0
20,000 Cape Copper Mining, t, So. Africa	7 0 0	40	38 40	24 15 0	1 0 0
4,000 Cedar Creek, g, California	5 0 0	—	—	0 5 0	0 4 0
80,000 Central American Association	16 8 6	—	—	0 6 0	0 1 0
15,000 Chicago, s, Utah	10 0 0	—	—	6 4 6	0 4 0
21,000 Colorado Terrible, t, Colorado	5 0 0	—	—	13 13 0	0 4 0
10,000 Coniaco, t, Chile	16 15 0	—	—	7 8 5	0 2 6
1,000 Don Pedro North del Rey	0 15 0	—	—	2 5 9	0 2 0
2,500 Eberhard and Aurora, t, Nevada	10 0 0	9	8 1/2 8%	1 5 0	0 5 0
5,000 Emma, g, s, Utah	20 0 0	—	—	8 12 0	0 6 0
70,000 Ferguson and Australian, t, S. Aust.	2 10 0	1%	1% 1%	2 18 9	0 2 0
15,000 Ferguson, t, California	3 0 0	—	—	0 3 0	0 3 0
80,000 Flagstaff, t, Utah	10 0 0	—	—	4 2 0	0 5 0
25,000 Fortuna, t, Spain	2 0 0	—	—	15 15 0	0 8 0
5,000 Frontino & Boliviana, g, New Granada	2 0 0	—	—	0 1 0	0 1 0
1					